Appendix I
Chemistry Syllabi 2011-2012 Academic Year

Introduction to Chemistry **Fall 2011**

CHEM1003.1 **CRN60090**

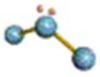
Dr. Draganjac **LSW549 Office**

LSW542 Lab

mdraganj@astate.edu **LSW534 Lab**

972-3272

Course: 9:00 - 9:50
MWF LSE507



Office hours: 10:00 – 10:50 am MTW; 9:00-10:50 R (Others by appointment)
Text: no text
Tests: 5 exams (500 points total for the exams).
One exam at the end of each of the sections listed below:

General Education Science Learning Outcomes/Objectives	
Objective	**Description**
Using Science to Accomplish Common Goals	Students will be able to understand concepts of science as they apply to contemporary issues.

Section
1. Metric System, Temperature Systems/Conversions, Significant Figures, Unit Conversions, Density, Review of Math, Operation of Electronic Calculators*
2. Chemical Symbols, Atomic Theory, Law of Definite/ Multiple Proportions, Periodic Table**, Writing Formulas, Naming Compounds
3. Stoichiometry, Mole Concept, Percent Composition, Empirical and Molecular Formulas, Writing and Balancing Equations
4. Theoretical yield, Limiting reactants, Solutions, Molarity, Dilutions
5. Gas Laws

Course related worksheets
Final exam: Friday, December 9, 2011, 8 am. The final will **not** be comprehensive.
Quizzes: 100 points - there will be 15 quizzes (10 points each), the 5 lowest quiz grades will be dropped to give a total of 100 points
Total points : 600

Grading - Straight percentage: 90+ A, 80 - 89.9999 B, 70 - 79.9999 C, 60 - 69.9999 D, Below 60 F.
Make up exams will be given at the end of the semester. Failure to take the exam at the scheduled time will result in a grade of zero for that exam.

Make-up exams: Exam times: see exam schedule page

In order to keep track off your grades, a Grade Performance Sheet is available. Simply print off the form and fill it in with your grades or bring it to me (Dr. Draganjac), and I will give you your grades. Keep in mind this is a generic form to be used with all of Draganjac's classes. Federal Law prohibits discussion of your grade with anyone. Also grades cannot be given by e-mail or over the phone.
*Graphing Calculators are not permitted in CHEM1003, CHEM1013 or CHEM1023. A solar powered Texas Instrument Scientific Calculator (estimated cost - less than $15) is recommended. The simpler, the better. You need one to do multiple roots, logs and scientific notation. Other brands are acceptable but the student is responsible for learning the operational procedures. Cell phone calculators will not be allowed.
** 1) Students are responsible for the first 103 elements. Students must know the element's symbol, name and correct spelling of the name. 2) Student must know the name, formula and charge of the ions listed on the Cation/ Anion List.

Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements can be made to ensure equal access to this course.

Tutoring: Peer tutoring is available to all students enrolled in ASU-Jonesboro courses in the **Learning Support Center** (LSC) located in the Dean B. Ellis Library, Room 100 (enter through the main library and take the stairs or elevator down to the ground floor). Tutors are able to assist students in almost all 1000- and 2000-level general education courses and some upper-division core courses. LSC hours are Monday – Thursday, 11:00 am – 7:00 pm and Friday 11:00 am – 5:00 pm.

Students can drop-in or make appointments by calling **972-3451** or emailing **LSC@astate.edu**. Tutor availability by subject should be posted on the LSC website after the 2nd week of the semester. Some tutors will prepare activities in advance for group tutoring sessions. LSC services are included in your tuition—there are no additional fees. Visit the LSC website for more information: http://www2.astate.edu/a/university-college/learning-support-services/learning-support-center/.

Revised 8/8/11

Draganjac Home Page

Fundamental Concepts of Chemistry Lab **Chem 1041-001**
LSE 402 **Fall 2011**
Dr. Sam Cron **Office LSE 514**
scron@astate.edu **972-3319**

Office hours: M&W:1-2, T: 2-3, R:12-2, and by appointment

Required Materials: safety glasses

Course Outcome: Using Science to Accomplish Common Goals - students will be able to understand concepts of science as they apply to contemporary issues.

Safety: The organic chemistry laboratory contains a number of chemicals which are toxic and/or flammable. For these reasons, I will enforce the following simple rules in order for you to have a safe laboratory experience:

Phones are not a part of this lab. Receiving or making phone calls or text messages will not be tolerated. Phones should be turned off or on silent mode and should be placed in your pocket, purse, backpack or somewhere out of sight.

No food or drinks are allowed in the lab.

Safety glasses are required and must be worn while in the lab. If I see you with your safety glasses off after the first 5 minutes of a lab, I will ask you to leave the laboratory. You will receive a grade of zero on the laboratory and will not be allowed to make up the lab!

NO FLAMES WITHOUT PERMISSION. Typically, you will not need flames for these experiments. If you do need to use a flame, check first and be sure there are no flammable materials out.

NO Contact Lenses. Wear eyeglasses instead. If chemicals splash in your eyes, contacts can be hard to remove. Also, vapors can be trapped against the eye surface by contact lenses.

Proper attire is required. Sandals, flip flops, shorts, earrings and necklaces that dangle are all prohibited.

Don't work in the lab alone. Don't perform unauthorized experiments. Wear appropriate clothing.

Many labs will be performed with a partner. Unless otherwise directed, there will be a maximum of one group of three in the lab. It is not your partner's responsibility to do everything that is associated with the lab. You must be an active participant. Also, you should work at **your** lab station (or your partner's).

Most labs will be turned in at the end of the lab period. If you are instructed to hold a lab until the next lab period, it is your responsibility to get that lab to me or the TA when it is due. You will be penalized 10 points for every day it is late. This means that if you are going to miss lab, you need to make arrangements to get the lab turned in on time. No excuses. Also, do not depend on your lab partner to be here every week. Do not send your data home with them and expect them to show up with the completed lab the following week. You will be disappointed.

This lab will be clean when you get here. It should remain clean. If you make a mess, clean it up. If you are unsure of how to proceed, ask the instructor or TA. If you break something, ask for help. Do not pick up broken glass with your hands.

Grades will be determined by the 10 labs for a total of 1000 points. You will have one lab period to make up a single missed lab.
Grades breakdown as follows: A–≥90–%, B–80–89%, C–70–79%, D–60–69%, F–≤59%.
Hold all of your graded labs until the end of the semester. If there is a discrepancy, you will have a record of your performance.

There will be a lab sign-in sheet for each lab period. You are not here until you sign it. Remember, you must sign it and not allow your friend or lab partner to do so.

All labs will be placed in the course documents section of Blackboard 8. If you do not have access to this class on Blackboard 8, let me know. You must have a printed copy of the lab and you should read the lab prior to your lab period.

Schedule of Labs:

Lab 1. Laboratory Rules, Laboratory Layout and Balances, Graphing assignment using spreadsheets
Lab 2. Weighing
Lab 3. Glassware and Density
Lab 4. Waters of Hydration
Lab 5. Limiting reactant – Preparation of Aspirin
Lab 6. Gas Laws
Lab 7. Calorimetry – Heat of Neutralization
Lab 8. Acid- Base Titration & Buffers
Lab 9. Preparation of a Calibration Curve
Lab 10. Rates of Reaction

Fall 2011 Chemistry 1043 Fundamentals of Chemistry

Instructor: Dr. Michael Panigot
Office: 517 Lab Sciences East
Phone: 972-3494
e-mail: mpanigot@astate.edu
Office Hours: MWF 10:00 – 11:50, also by appointment
Class Meets: LSE 218 12:00 – 12:50 MWF
Text: Denniston, Topping, & Caret "General, Organic, and Biochemistry" 7th Ed., McGraw-Hill, 2011

Course Description: Chem 1043 is a 1 semester course introducing concepts including but not limited to dimensional analysis, moles, atomic and molecular structure, nomenclature, reactions, thermochemistry, intermolecular interactions, gases, mixtures, kinetics, equilibrium and acid base chemistry..

Course Objectives: The course is designed to present topics in chemistry geared toward those who need to have a chemistry background for their chosen profession but are not science majors.

Chemistry Learning Outcomes/Objectives: Describe observed and modeled chemical phenomena using fundamental chemical principles and algebra based mathematics.

Student Learning Objective: Students will be able to understand concepts of science as they apply to contemporary issues.

Course Outline (Tentative):

Week #	Chapter	Topic
1,2	1	Chemistry – Methods & Measurement
2,3	2	Structure of the Atom & Periodic Table
3,4	3	Structure & Properties of Covalent and Ionic Compounds
5,6	4	Calculations & the Chemical Equation
7,8	5	States of Matter – Gases, Liquids, & Solids
9,10	6	Solutions
11,12	7	Energy, Rate, & Equilibrium
12,13	8	Acids & Bases and Oxidation – Reduction reactions
13,14	9	The Nucleus, Radioactivity, & Nuclear Medicine

Homework: Homework will not be collected or graded. It is to your benefit to work end of section and end of chapter problems to check your understanding of the material. Quiz and exam questions may come from or be based on homework material.

Quizzes: Quizzes will be given weekly during weeks when there is not an exam scheduled for a total of 8 quizzes that will be counted. Each quiz will be worth 15 points making 120 points from quizzes possible. I will try to provide extra quizzes so **NO MAKE-UP QUIZZES WILL BE PROVIDED unless you are gone on *documented* University business and arrangements are made with me PRIOR TO the scheduled date and time for the quiz.**

Exams: Exams will be given approximately every 3 weeks according to this schedule:

Exam I	Fri. Sept. 9, 2011
Exam II	Fri. Sept. 30, 2011
Exam III	Fri. Oct. 21, 2011
Exam IV	Wed. Nov. 16, 2011
Exam V	Mon. Dec. 5, 2011 (last day)

Exams will be worth 100 points making a total of 500 points from exams possible. They will be written to take not longer than 50 minutes to complete and a time limit will be imposed. They will be based in part on the quizzes, however, some questions will be more difficult than quiz questions. **(over)**

Final Exam: The final exam will be worth 100 points. It will be a comprehensive final and will be given **Fri., Dec. 9, 2011 12:30 - 2:30 PM**

Makeup Exam Policy: If you know in advance that you will not be able to be present for an exam, please let me know. Under these circumstances you may make up the exam within a week of the scheduled exam date. IF YOU DO NOT MAKE UP THE EXAM WITHIN A WEEK A GRADE OF ZERO WILL BE ENTERED. If you are absent due to illness I'll need a signed medical excuse and you can make up the exam within a week of the scheduled date. In all other cases NO MAKE-UP EXAMS WILL BE GIVEN.

Grading: Grades are based on the total number of points possible. Points are distributed as shown:

10 quizzes @ 10 points each:	**120 points**
4 exams @ 100 points each:	**500 points**
Final Exam @100 points each:	**100 points**
Total:	**720 points**

Tentatively, grade cutoffs will be according to the following scheme:

90% to 100% = A
80% to 89.99% = B
70% to 79.99% = C
60% to 69.99% = D

Depending on class performance, the scale may be lowered but will not be raised above these values.

Academic Dishonesty: Please see http://studentconduct.astate.edu/AcademicIntegrity.html for details of academic dishonesty and integrity. If I find anyone cheating they will initially be warned that if they are caught a second time they will receive a letter grade of F for my course.

Information for Students with Disabilities: Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements will be made to ensure equal access to this course.

Attendance in 1000 and 2000 level courses (Taken directly from the ASU Student Handbook online at http://www.astate.edu/a/student-affairs/student-conduct/student-handbook-0910.dot)
Students enrolled in freshman or sophomore level courses numbered 1000 or 2000 may during the spring and fall semester miss no more than twice the number of lectures, recitations, laboratory sessions, or other regularly scheduled class activities that would normally be scheduled during a week. Students who miss more than the maximum number of freshman or sophomore level classes may be assigned a grade of "F" for the course. Students who may be assigned a grade of "F" in a course because of excessive absences may withdraw from the course without penalty before the deadline for dropping an individual course. In determining whether excessive absences should result in a failing grade, consideration shall be given to the maturity and class standing of the student, the quality of academic work being accomplished by the student, and extenuating circumstances related to such absence.

CHEM 1052 Fundamental Concepts of Chemistry II

Dr. Sam Cron **Office LSE 514**
scron@astate.edu **972-3319**

CHEM-1052-001

Course Outcome: Using Science to Accomplish Common Goals - students will be able to understand concepts of science as they apply to contemporary issues.

Text: Any edition of General, Organic and Biochemistry, Denniston.

Grading: Six 100 point online exams will be administered during the semester including a comprehensive final. You will have two hours to complete each exam. There will be two quizzes per chapter and each quiz will have a one hour time limit. Your final grade will be the average of the six tests and the quiz grade as an average. A number of quizzes may be dropped in the end but I do not know the number. You should do them all and not get behind. Once you start an online assignment, you must finish within the allotted time. Questions will come up one at a time and there is no backtracking. You must a have a reliable computer and connection to the internet.
Grades breakdown as follows: A-≥90-%, B-80-89%, C-70-79%, D-60-69%, F-≤59%.
Topics covered in this class include the following:

Chapter 8: Acids and Bases and Oxidation-Reduction
Chapter 11: The Unsaturated Carbons: Alkenes, Alkynes, and Aromatics
Chapter 12: Alcohols, Phenols, Thiols, and Ethers
Chapter 13: Aldehydes and Ketones
Chapter 14: Carboxylic Acids and Carboxylic Acid Derivatives
Chapter 15: Amines and Amides
Chapter 16: Carbohydrates
Chapter 17: Lipids and Their Functions in Biochemical Systems
Chapter 18: Protein Structure and Function
Chapter 19: Enzymes
Chapter 20: Introduction to Molecular Genetics
Chapter 21: Carbohydrate Metabolism

CHEM 1011 General Chemistry I Laboratory
Fall 2011
Course Syllabus

Instructors Information

Instructor: Dr. Benjamin L. Rougeau
General Chemistry Coordinator: Dr. Richard A.F. Warby

Office Location: Lab Science East Room 421 (LSE 420)
Lab Science East Room 518 (LSE 419)

Office Phone: 870-972-3412
870-972-2422

Fax: 870-972-3089

E-Mail: brougeau@astate.edu
rwarby@astate.edu

General Course Information

Class Meeting Times and Location:
Tuesdays 8:00am-10:50am, 11:00am - 1:50 pm or 2:00pm - 4:50pm in LSE 402;
Wednesdays 8:00am - 10:50 pm or 11:00pm - 2:00pm in LSE 402.

Official Office Hours: Tuesday and Wednesday, 10:00-11:00am. **Note:** We have an open door policy. Should you need help outside of our official office hours you are ALWAYS welcome to stop by our offices. However, we need to see evidence that you have at least attempted the problems.

Text Book: A Laboratory Manual will be provided at the beginning of the semester.

Students with Disabilities: Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements can be made to ensure equal access to this course.

Course Objectives/Outcomes

- Students will be able to understand concepts of science as they apply to contemporary issues.

Grading and Assignments

Grade	Straight Percentages
A	90+
B	80 – 89.999
C	70 -79.999
D	60 -69.999
F	Below 60

There will be no curving of grades in this class!

Work Product	Grade Contribution (%)
Pre-Laboratory Assignments	20
10-12 Laboratory Reports	60
2 Practical Laboratory Exams	20
TOTAL	**100**

Grade Requests during the Semester: In order to keep track of your grades during the semester please come and see us and we will give you your then-current grade. However, we ask that you do not abuse this privilege otherwise it may be revoked. Federal Law prohibits discussion of your grade with anyone. Also, grades cannot be given by e-mail or over the phone.

Late, Missing, and Makeup Laboratories

Laboratory reports are due one week after the laboratory (**before** the beginning of the following laboratory). Late laboratory reports will be assessed a penalty of one letter grade per day or part thereof.

Should you miss a laboratory during the semester please provide official documentation as to the reason for missing it. If more two or more laboratories are missed during the course of the semester, a grade of zero will be assigned for the additional missing laboratories. Each case will be dealt with on an individual basis.

A makeup laboratory will be held at the end of the semester. Failure to take the makeup at the scheduled time will result in a zero for that laboratory. All makeup laboratories must be done before the beginning of finals.

Information You Will Need to Know:

Posted on Blackboard

1) List of Common Cations
2) List of Common Anions
3) Elements of the Periodic Table (1-109; names, correct spelling, symbol)
4) List of Common Reagents
5) List of Common Acids and Bases (strong and weak)

Course Topics to be Covered

General Areas the Laboratories Will Cover	
Chapter 4	Reactions in Aqueous Solutions
Chapter 5	Thermochemistry
Chapter 6	Quantum Theory and Electronic Structure of Atoms
Chapter 7	Electron Configuration and the Periodic Table
Chapter 8	Chemical Bonding I: Basic Concepts
Chapter 9	Chemical Bonding II: Molecular Geometry and Bonding Theories
Chapter 11	Gases

Specific Laboratories	
Laboratory 1	Check In, Safety, MSDS, Layout, and Analytical Balances
Laboratory 2	Nomenclature
Laboratory 3	Glassware
Laboratory 4	Graphing, Basic Statistics, Density, and an Introduction to Microsoft Excel
Laboratory 5	Waters of Hydration and Percent Composition
Laboratory 6	Synthesis of Aspirin
Laboratory 7	Determination of the Purity of Laboratory Synthesized Aspirin
Laboratory 8	Specific Heat
Laboratory 9	Trends in the Periodic Table
Laboratory 10	Calibration Curves
Laboratory 11	Lewis Dot Structures and Molecular Geometry
Laboratory 12	Hess's Law
Makeup Laboratory	Gas Laws: Airbags

The entire Laboratory Manual will be posted on Blackboard during the first week of laboratories.
The order and specifics of the abovementioned laboratories may change.

Cheating

What Constitutes Cheating
Cheating Includes but is not limited to:

1. Cheating is an act of dishonesty with the intention of obtaining and/or using information in a fraudulent manner.
2. Observing and/or copying from another student's test paper, reports, computer files and/or other class assignments.
3. Giving or receiving assistance during an examination period. (This includes providing specific answers to subsequent examinees and/or dispensing or receiving information that would allow the student to have an unfair advantage in the examination over students who did not possess such information.)
4. Using class notes, outlines and other unauthorized information during an examination period.
5. Using, buying, selling, stealing, transporting, or soliciting, in part or entirely the contents of an examination or other assignment not authorized by the professor of the class.
6. Using for credit in one class without the knowledge and permission of the professor of the class.

7. Exchanging places with another person for the purposes of taking an examination or completing other assignments.

Disciplinary Actions
According the Arkansas State University Student Handbook, faculty members may respond to cases of cheating in any of the following ways:

1. Allow the testing to progress without interruption, informing the offending student about the offense and award a failing grade on the test "F" if a letter is used or zero if a numerical grade is used.
2. Seize the test of the offending student and give a failing grade on the paper.
3. Give the offending student a failing grade in the course.
4. Recommend sanctions, including disciplinary expulsion from the University.
5. NOTE: For the purposes of General Chemistry I Laboratory: Students convicted of cheating will receive a failing grade (F) in the course. No further correpondance shall be entered into.

Please note that work done in the laboratories will be performed in pairs. However, all clauclations and writeups are to be INDIVIDUAL EFFORTS. Copying laboratory reports or calcualtions from someonelse will be considered cheating and will be dealt with accordingly.

Other

1. Please arrive on time for the laboratory, it is a disruption to those listening to the pre-lab. when people arrive late. Similarly, we will try and finish the laboratory on time to ensure you can get to other classes punctually.
2. When corresponding with us via e-mail, we would greatly appreciate an appropriate salutation and signature. We will delete any e-mails sent to us starting inappropriately including but not limited to: hey; what-up; howzit; etc. Appropriate salutations include but are not limited to: Dear Dr. Warby; Hello Dr. Rougeau; Dr. Warby; etc.

General Chemistry 1 Fall 2011

Course Syllabus

Instructor Information

Instructor: Dr. Richard A.F. Warby

Office Location: Lab Science East Room 420 (LSE 420)

Office Phone: 870-972-3412

Fax: 870-972-3089

E-Mail: rwarby@astate.edu

General Course Information

Prerequisite for CHEM 1013: CHEM 1003 or High School Chemistry

Corequisite for CHEM 1013: MATH 1023 College Algebra

Class Meeting Times and Location: Monday, Wednesday, and Friday 9:00-9:50am; Ag 203

Official Office Hours: 10:00-11:00am MWF. **Note:** I have an open door policy. Should you need help outside of my official office hours you are ALWAYS welcome to stop by my office. However, for homework assignments, I need to see evidence that you have at least attempted the problems.

Text Book: Chemistry by Julia Burdge, 2nd ed. McGraw Hill.

Use of Calculators: The use of graphing calculators or calculators with extended memory is not allowed on tests/exams. The calculator you choose must be able to do scientific notation, multiple roots and natural logarithms. Cell phone calculators will not be allowed.

Students with Disabilities: Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements can be made to ensure equal access to this course.

Grading and Assignments

Grade	Straight Percentages
A	90+
B	80 – 89.999
C	60 -79.999
D	50 -59.999
F	Below 50

There will be no curving of grades in this class!

Work Product	Grade Contribution (%)
4 Semester Tests **(Includes a Midterm)**	35
9 Homework Assignments	40
Final Exam **(Comprehensive)**	10
9 Reading Assignment Quizzes	15
TOTAL	**100**

Homework Assignments: These will be assigned through McGraw Hill Connect. You will need to purchase a Connect account either through the McGraw Hill website or at the ASU Library at a cost of ~$50. There will be a total of 9 homework assignments. The unique web address for this class is:

http://connect.mcgraw-hill.com/class/r_warby_chemistry_1013_fall_2011

Grade Requests During the Semester: In order to keep track of your grades during the semester please come and see me and I will give you your then-current grade. However, I ask that you do not abuse this privilege otherwise it may be revoked. Federal Law prohibits discussion of your grade with anyone. Also, grades cannot be given by e-mail or over the phone.

Makeup Exams

Should you miss a test/exam during the semester please provide documentation as to the reason for missing the test/exam. Each case will be dealt with on an individual basis.

Makeup exams will be given the last week of the semester, likely on dead-day. Failure to take the makeup at the scheduled time will result in a zero for that exam. The makeup exam schedule will be posted on Blackboard in the coming weeks.

Course Objectives/Outcomes

- Students will be able to understand concepts of science as they apply to contemporary issues.

More Detailed learning objectives for all the material to be covered are posted on Blackboard by Burdge Chapter.

Information You Will Need to Know

Posted on Blackboard

1) List of Common Cations
2) List of Common Anions
3) Elements of the Periodic Table (1-109; names, correct spelling, symbol)
4) List of Common Reagents
5) List of Common Acids and Bases (strong and weak)

Course Topics to be Covered

Please note that Chapters 1-3 of Burdge are assumed knowledge. While these will be taught in one way or another during the course of the semester, they will not be formally covered as an entity unto themselves.

This semester the Chapters in Burdge will be covered roughly in the following order:
Chapters 6,7,8,9,4,5,and 11.

Chapters of Burdge Covered in General Chemistry I	
Chapter 4	Reactions in Aqueous Solutions
Chapter 5	Thermochemistry
Chapter 6	Quantum Theory and Electronic Structure of Atoms
Chapter 7	Electron Configuration and the Periodic Table
Chapter 8	Chemical Bonding I: Basic Concepts
Chapter 9	Chemical Bonding II: Molecular Geometry and Bonding Theories
Chapter 11	Gases

Topics to be Covered in General Chemistry I
Chapter 4
Reactions in aqueous solution
Molecular, total ionic, net ionic reactions
Definitions of acid and base (Arrhenius, Bronsted-Lowry, Lewis)
Acid-base reactions
Description of pH scale
Redox reactions and assigning oxidation numbers
Reversible (equilibrium) reactions
Chapter 5
State functions
Internal energy
Calorimetry
Enthalpy
Standard enthalpy of formation
Calculate ΔH^{o}_{rxn}
Hess's Law

Topics to be Covered in General Chemistry I
1st Law of Thermodynamics
Chapter 6
Subatomic particles
Wave-particle duality of energy and matter
Quantitization of energy
Atomic spectra
Bohr Model of H atom
Atomic orbital quantum numbers (n, l, m_l, m_s)
Atomic electron configurations
Chapter 7
The Periodic Table
Periodic trends (atomic size, ionic size, ionization energy, electron affinity, etc)
Chapter 8
Lewis dot symbols
Ionic bond
Covalent bond
Bond length
Bond energy
Bond energy and calculating ΔH^o
Polar covalent bond and electronegativity
Lewis structure
Octet rule
Formal charge,
Multiple bonds
Resonance
Chapter 9
Valence Shell Electron Pair Repulsion theory (electronic and molecular geometry)
Molecular polarity/non-polarity and dipole moment
Valence Bond theory
Hybridization and hybrid orbitals (sp, sp^2 sp^3 sp^3d sp^3d^2)
Sigma and pi bonding
Chapter 11
Properties of gases
Gas laws (i.e. Boyle, Charles, Gay-Lussac, Avogadro, combined)
Ideal gas law
Dalton's law of partial pressure
Kinetic-Molecular theory

Supplemental Instruction

This course is supported by Supplemental Instruction (SI), an academic support program that targets historically difficult courses and seeks to increase student success through weekly peer assisted study sessions. Each SI session is led by a trained, knowledgeable SI Peer Leader who will organize group learning activities that integrate how-to-learn with what-to-learn.

Attendance at SI sessions is voluntary but highly encouraged to build relationships with fellow students and to feel confident with course content. SI is provided for all students who want to improve their understanding of course material and improve their grades. On average, students who attend SI earn higher course grades (~15-20%) and withdraw less often than non-SI participants.

Meeting times for SI sessions will be determined during the first week of lecture and will be based on responses from a student availability survey conducted by the SI Leader. The SI Leader will also announce her office hours in the Learning Support Center to offer assistance if a student is not able to attend a regularly scheduled SI session. Please contact Learning Support Services (ext. 3451 or Isc@astate.edu) if you have any questions or suggestions for improvement. Your student leader for the semseter is:
Lori Hall: mailto:lori.hall@smail.astate.edu

Cheating

What Constitutes Cheating
Cheating Includes but is not limited to:

1. Cheating is an act of dishonesty with the intention of obtaining and/or using information in a fraudulent manner.
2. Observing and/or copying from another student's test paper, reports, computer files and/or other class assignments.
3. Giving or receiving assistance during an examination period. (This includes providing specific answers to subsequent examinees and/or dispensing or receiving information that would allow the student to have an unfair advantage in the examination over students who did not possess such information.)
4. Using class notes, outlines and other unauthorized information during an examination period.
5. Using, buying, selling, stealing, transporting, or soliciting, in part or entirely the contents of an examination or other assignment not authorized by the professor of the class.
6. Using for credit in one class without the knowledge and permission of the professor of the class.
7. Exchanging places with another person for the purposes of taking an examination or completing other assignments.

Disciplinary Actions
According the Arkansas State University Student Handbook, faculty members may respond to cases of cheating in any of the following ways:

1. Allow the testing to progress without interruption, informing the offending student about the offense and award a failing grade on the test "F" if a letter is used or zero if a numerical grade is used.
2. Seize the test of the offending student and give a failing grade on the paper.
3. Give the offending student a failing grade in the course.
4. Recommend sanctions, including disciplinary expulsion from the University.

5. **<u>NOTE:</u> For the purposes of General Chemistry I: Students convicted of cheating will receive a failing grade (F) in the course. No further correpondance shall be entered into.**

<u>Other</u>

1. Please arrive on time for class, it is a disruption to those already seated when people arrive late. Similarly, I will finish class on time to ensure you can get to other classes punctually.
3. When corresponding with me via e-mail, I would greatly appreciate an appropriate salutation and signature. I will delete any e-mails sent to me starting inappropriately including but not limited to: hey; what-up; howzit; etc. Appropriate salutations include but are not limited to: Dear Dr. Warby; Hello Dr. Warby; Dr. Warby; etc.

CHEM 1021 General Chemistry II Laboratory
Fall 2011
Course Syllabus

Instructors Information

Instructor: Dr. Benjamin L. Rougeau
General Chemistry Coordinator: Dr. Richard A.F. Warby

Office Location: Lab Science East Room 421 (LSE 420)
Lab Science East Room 518 (LSE 419)

Office Phone: 870-972-3412
870-972-2422

Fax: 870-972-3089

E-Mail: brougeau@astate.edu
rwarby@astate.edu

General Course Information

Class Meeting Times and Location: Thursdays 8:00am - 10:50 am or 2:00pm - 4:50pm in LSE 402.

Official Office Hours: Thursday, 12:00-2:00pm. **Note:** We have an open door policy. Should you need help outside of our official office hours you are ALWAYS welcome to stop by our offices. However, we need to see evidence that you have at least attempted the problems.

Text Book: A Laboratory Manual will be provided.

Students with Disabilities: Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements can be made to ensure equal access to this course.

Course Objectives/Outcomes

- Students will be able to understand concepts of science as they apply to contemporary issues.

Grading and Assignments

Grade	Straight Percentages
A	**90+**
B	**80 – 89.999**
C	**70 -79.999**
D	**60 -69.999**
F	**Below 60**

There will be no curving of grades in this class!

Work Product	Grade Contribution (%)
Pre-Laboratory Assignments	**20**
10-12 Laboratory Reports	**60**
2 Practical Laboratory Exams	**20**
TOTAL	**100**

Grade Requests during the Semester: In order to keep track of your grades during the semester please come and see us and we will give you your then-current grade. However, we ask that you do not abuse this privilege otherwise it may be revoked. Federal Law prohibits discussion of your grade with anyone. Also, grades cannot be given by e-mail or over the phone.

Late, Missing, and Makeup Laboratories

Laboratory reports are due one week after the laboratory (**before** the beginning of the following laboratory). Late laboratory reports will be assessed a penalty of one letter grade per day or part thereof.

Should you miss a laboratory during the semester please provide official documentation as to the reason for missing it. If more two or more laboratories are missed during the course of the semester, a grade of zero will be assigned for the additional missing laboratories. Each case will be dealt with on an individual basis.

A makeup laboratory will be held at the end of the semester. Failure to take the makeup at the scheduled time will result in a zero for that laboratory. All makeup laboratories must be done before the beginning of finals.

Information You Will Need to Know

Posted on Blackboard:

1) List of Common Cations
2) List of Common Anions
3) Elements of the Periodic Table (1-109; names, correct spelling, symbol)
4) List of Common Reagents
5) List of Common Acids and Bases (strong and weak)

Course Topics to be Covered

General Areas the Laboratories Will Cover	
Chapter 12	Intermolecular Forces and the Physical Properties of Liquids and Solids
Chapter 13	Physical Properties of Solutions
Chapter 14	Chemical Kinetics
Chapter 15	Chemical Equilibrium
Chapter 16	Acids and Bases
Chapter 17	Acid -Base Equilibrium and Solubility Equilibrium
Chapter 18	Entropy, Free Energy, and Equilibrium
Chapter 19	Electrochemistry

Specific Laboratories	
Laboratory 1	Check-In, Safety, Massing Exercise
Laboratory 2	Determination of the K_{sp}, Standard Enthalpy Change, and the Gibbs Free Energy for the Dissolution of Borax in Water
Laboratory 3	Intermolecular Forces
Laboratory 4	Colligative Properties
Laboratory 5	Concentration and Dilution of Solutions
Laboratory 6	Rates of Reaction (A)
Laboratory 7	Rates of Reaction (B)
Laboratory 8	Equilibrium
Laboratory 9	Stress of Equilibrium (Le Châtelier's)
Laboratory 10	Acid-Base Reactions
Laboratory 11	Hydrolysis of a Salt
Laboratory 12	Buffers
Laboratory 13	Electrochemistry
Makeup Laboratory	Air Bags

The entire Laboratory Manual will be posted on Blackboard during the first week of laboratories.
The order and specifics of the abovementioned laboratories may change.

Cheating

What Constitutes Cheating
Cheating Includes but is not limited to:

1. Cheating is an act of dishonesty with the intention of obtaining and/or using information in a fraudulent manner.
2. Observing and/or copying from another student's test paper, reports, computer files and/or other class assignments.
3. Giving or receiving assistance during an examination period. (This includes providing specific answers to subsequent examinees and/or dispensing or receiving information that would allow the student to have an unfair advantage in the examination over students who did not possess such information.)
4. Using class notes, outlines and other unauthorized information during an examination period.

5. Using, buying, selling, stealing, transporting, or soliciting, in part or entirely the contents of an examination or other assignment not authorized by the professor of the class.
6. Using for credit in one class without the knowledge and permission of the professor of the class.
7. Exchanging places with another person for the purposes of taking an examination or completing other assignments.

Disciplinary Actions
According the Arkansas State University Student Handbook, faculty members may respond to cases of cheating in any of the following ways:

1. Allow the testing to progress without interruption, informing the offending student about the offense and award a failing grade on the test "F" if a letter is used or zero if a numerical grade is used.
2. Seize the test of the offending student and give a failing grade on the paper.
3. Give the offending student a failing grade in the course.
4. Recommend sanctions, including disciplinary expulsion from the University.
5. NOTE: For the purposes of General Chemistry I Laboratory: Students convicted of cheating will receive a failing grade (F) in the course. No further correpondance shall be entered into.

Please note that work done in the laboratories will be performed in pairs. However, all clauclations and write-ups are to be INDIVIDUAL EFFORTS. Copying laboratory reports or calcualtions from someonelse will be considered cheating and will be dealt with accordingly.

Other

1. Please arrive on time for the laboratory, it is a disruption to those listening to the pre-lab. when people arrive late. Similarly, we will try and finish the laboratory on time to ensure you can get to other classes punctually.
2. When corresponding with us via e-mail, we would greatly appreciate an appropriate salutation and signature. We will delete any e-mails sent to us starting inappropriately including but not limited to: hey; what-up; howzit; etc. Appropriate salutations include but are not limited to: Dear Dr. Warby; Hello Dr. Rougeau; Dr. Warby; etc.

General Chemistry II
Chem 1023
Fall 2011
TTh 11:00AM-12:15PM LSW 334

William Burns
972-2535
Office LSE 213
Office Hours : TTh 2:30-4:00 PM or by appointment

Course Objective

- Describe observed and modeled chemical phenomena using fundamental chemical principles and calculus based mathematics.

Chapter objectives will be supplied throughout the semester.

Textbook:

- Chemistry, 2nd edition, Julia Burdge, ISBN 9780077354763.
- Coursesmart (http://www.coursesmart.com/) e-book $118.50, 1 year access, ISBN 9780077354763, this option requires a credit card.

Calculator: You will need a non-graphing, scientific calculator for this course (approximately $15-20). I will not allow sharing of calculators during an exam, so each student must have a calculator. Graphing calculators and the use of cellular phones during exams and quizzes is not permitted in Chem I or Chem II.

Websites:

- **Blackboard Learn** http://bblearn.astate.edu/ I will be using Blackboard Learn throughout the semester to post announcements, notes, chapter learning objectives… During lecture I will tell you if I have posted anything new. I will post notes and chapter learning objectives in "Learning Units," and the syllabus will be located in "Syllabus." All Posted documents will be in PDF format.
    - There are two versions of Blackboard in use at ASU this year; Blackboard Release 8 (login at http://blackboard.astate.edu/), and Blackboard Learn (login at http://bblearn.astate.edu/). Make sure to login to Blackboard Learn.
- **ARIS** http://mharis.com/ The ARIS (Assessment, Review, and Instruction System) is an online electronic homework and course management system which will be used most of the semester. ARIS assignments will be posted and submitted via the web, and the ARIS grade book will be updated throughout the semester. Access can be purchased ($50.00) via the ARIS website or through the ASU Bookstore. A document titled "Gen Chem II Fall 2011 ARIS Quick Start Guide" has been posted in Blackboard which describes how to access ARIS.

Supplemental Instruction

This course is supported by Supplemental Instruction (SI), an academic support program that targets historically difficult courses and seeks to increase student success through weekly peer assisted study sessions. Each SI session is led by a trained, knowledgeable SI Peer Leader who will organize group learning activities that integrate how-to-learn with what-to-learn.
Attendance at SI sessions is voluntary but highly encouraged to build relationships with fellow students and to feel confident with course content. SI is provided for all students who want to improve their

understanding of course material and improve their grades. On average, students who attend SI earn higher course grades and withdraw less often than non-SI participants.
Meeting times for SI sessions will be determined during the first week of lecture and will be based on responses from a student availability survey conducted by the SI Leader. The SI Leader will also announce his or her office hours in the Learning Support Center to offer assistance if a student is not able to attend a regularly scheduled SI session. Please contact Learning Support Services (ext. 3451 or Isc@astate.edu) if you have any questions or suggestions for improvement.
SI Peer Leader: Megan Wells

Disabilities:
Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodations. Appropriate arrangements can be made to ensure equal access to this course.

Topics to be covered

Chapter 18	Entropy, Free Energy
Chapter 12	Intermolecular Forces and the Physical Properties of Liquids and Solids
Chapter 13	Physical Properties of Solutions
Chapter 14	Chemical Kinetics
Chapter 15	Chemical Equilibrium, Free Energy & Equilibrium (Sec 18.6)
Chapter 16	Acids and Bases
Chapter 17	Acid-Base Equilibria and Solubility Equilibria
Chapter 19	Electrochemistry

Tentative Exam Schedule

Unit exam # 1	Tuesday, September 13, 2011
Unit exam #2	Thursday, October 6, 2011
Unit exam # 3	Tuesday, November 1, 2011
Unit exam # 4	Thursday, December 1, 2011
Comprehensive Final	Thursday, December 8, 2011 10:15AM-12:15PM, location to be announced

A single comprehensive make-up exam will be given on Tuesday, December 6, 2011 at 9:00AM for anyone that has missed one or more unit exams. You will need to sign up for this exam prior to the day of the exam (more information will be provided later in the semester).

Tentative Point Distribution

	Points
Unit exam 1	100
Unit exam 2	100
Unit exam 3	100
Unit exam 4	100

Homework and quizzes*	150
Comprehensive Final	200
	750
* No makeup quiz/homework will be given.	

Grading

Individual final course grades will be based on the following scale and the total number of earned points.

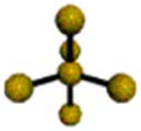
Points Earned	Grade
≥ 90 %	A
$< 90\%$ and $\geq 80\%$	B
$< 80\%$ and $\geq 70\%$	C
$< 70\%$ and $\geq 60\%$	D
$< 60\%$	F

Descriptive Inorganic Chemistry — Fall 2011

Dr. Draganjac
Draganjac Home Page
mdraganj@astate.edu
972-3272

LSW549 Office
LSW542 Lab
LSW534 Lab

CHEM2004 (CRN60133)



Course: 1:00-1:50 MW, 12:00-1:50 F LSE507
Office hours: 10:00 - 10:50 M - W; 9:00 - 10:50 R (Others by appointment)

Text: Principles of Descriptive Inorganic Chemistry, Wulfsberg (ISBN 0-534-07494-4)

Sections:
1. Review of G. Chem. (worksheet, Ch. 1)
2. Properties of the elements (Ch. 6)
3. Metal cations/ oxo anions in aqueous solution (Ch. 2), Precipitation reactions (Ch. 3)
4. Oxides, Polyoxoanions (Ch. 4) Part 1
5. Polyoxoanions (Ch. 4) Part 2, Redox (Ch. 5)
6. Transition metals in biological systems, actinides and lanthanides, nuclear chemistry
7. Solubility Rules, Qual. Schemes, Qualitative analysis (Lab)

Grading:
Labs: 100 points
Tests: 6 chapter exams, 1 lab exam plus comprehensive final (800 points total)
Total Possible Points: 900
Grading is straight percentages: 90+, A; 80-89, B; 70-79, C; 60-69, D; Below 60, F.
Time and date for the Final exam: Wednesday, Dec. 7, 2:45 pm
Makeup Exams: The final exam will replace any test score missed for any reason.

Objective	Description
Phenomena	Describe observed and modeled chemical phenomena using fundamental chemical principles and algebra based mathematics.

In order to keep track off your grades, a Grade Performance Sheet is available. Simply print off the form and fill it in with your grades or bring it to me (Dr. Draganjac), and I will give you your grades. Keep in mind this is a generic form to be used with all of Draganjac's classes. Federal Law prohibits discussion of your grade with anyone. Also grades cannot be given by e-mail or over the phone.

Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements can be made to ensure equal access to this course.
Revised 8/10/11

Quantitative Chemical Analysis (3054) Spring 2012

Course Syllabus

Instructor Information

Instructor: Dr. Richard A.F. Warby
Office Location: Lab Science East Room 420 (LSE 420)
Office Phone: 870-972-3412
Fax: 870-972-3089
E-Mail: rwarby@astate.edu

General Course Information

Class Meeting Times and Location: Tuesdays and Thursdays from 12:30pm-5:00pm.

Official Office Hours: 10:00-11:00am Tuesdays and Thursdays. **Note:** I have an open door policy. Should you need help outside of my official office hours you are ALWAYS welcome to stop by my office. However, for homework assignments, I need to see evidence that you have at least attempted the problems.

Text Book: Quantitative Chemical Analysis 8th Edition by D. Harris

Use of Calculators: The use of graphing calculators or calculators with extended memory is not allowed on tests/exams. The calculator you choose must be able to do scientific notation, multiple roots and natural logarithms. Cell phone calculators will not be allowed.

Students with Disabilities: Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements can be made to ensure equal access to this course.

Grading and Assignments

Grade	Straight Percentages
A	90+
B	80 – 89.999
C	70 -79.999
D	60 -69.999
F	Below 60

There will be no curving of grades in this class!

Work Product	Grade Contribution (%)
3 Exams (Including a Midterm and Final)	25
Homework	20
Laboratories (In-Lab and Written Reports)	30
2 Laboratory Exams	20
Class Participation	5
TOTAL	**100**

Grade Requests During the Semester: In order to keep track of your grades during the semester please come and see me and I will give you your then-current grade. However, I ask that you do not abuse this privilege otherwise it may be revoked. FERPA prohibits discussion of your grade with anyone. Also, grades cannot be given by e-mail or over the phone.

Makeup Exams

Should you miss a test/exam during the semester please provide documentation as to the reason for missing the test/exam. Each case will be dealt with on an individual basis.

Makeup exams will be given the last week of the semester, likely on dead-day. Failure to take the makeup at the scheduled time will result in a zero for that exam. The makeup exam schedule will be posted on Blackboard in the coming weeks.

Course Objectives/Outcomes

- Fully understand the process, associated errors/accuracy, quality control, and limitations of chemical analysis.
- Be able to quantitatively determine the concentration of an unknown in the laboratory within acceptable limits of precision and accuracy using wet-chemistry methods.

Course Topics to be Covered

Topics/Chapters to be Covered in Quant	
Chapter 1	Chemical Measurements
Chapter 2	Tools of the Trade
Chapter 3	Experimental Error
Chapter 4	Statistics
Chapter 5	Quality Assurance and Calibration Methods
Chapters 6-9, and 12	Equilibria
Chapters 10-11	Titrations
Chapter 15	Redox Titrations
Chapters 17 and 20-21	Spectrophotometry
Chapter 26	Gravimetric Analysis
Warby	“Real-World” Samples

Cheating

What Constitutes Cheating
Cheating Includes but is not limited to:

- Cheating is an act of dishonesty with the intention of obtaining and/or using information in a fraudulent manner.
- Observing and/or copying from another student's test paper, reports, computer files and/or other class assignments.
- Giving or receiving assistance during an examination period. (This includes providing specific answers to subsequent examinees and/or dispensing or receiving information that would allow the student to have an unfair advantage in the examination over students who did not possess such information.)
- Using class notes, outlines and other unauthorized information during an examination period.
- Using, buying, selling, stealing, transporting, or soliciting, in part or entirely the contents of an examination or other assignment not authorized by the professor of the class.
- Using for credit in one class without the knowledge and permission of the professor of the class.
- Exchanging places with another person for the purposes of taking an examination or completing other assignments.

Disciplinary Actions
According the Arkansas State University Student Handbook, faculty members may respond to cases of cheating in any of the following ways:

- Allow the testing to progress without interruption, informing the offending student about the offense and award a failing grade on the test "F" if a letter is used or zero if a numerical grade is used.
- Seize the test of the offending student and give a failing grade on the paper.
- Give the offending student a failing grade in the course.
- Recommend sanctions, including disciplinary expulsion from the University.
- **NOTE: For the purposes of Environmental Chemistry: Students convicted of cheating will receive a failing grade (F) in the course. No further correpondance shall be entered into.**

Other

- Please arrive on time for class, it is a disruption to those already seated when people arrive late. Similarly, I will finish class on time to ensure you can get to other classes punctually.
- When corresponding with me via e-mail, I would greatly appreciate an appropriate salutation and signature. I will delete any e-mails sent to me starting inappropriately including but not limited to: hey; what-up; howzit; etc. Appropriate salutations include but are not limited to: Dear Dr. Warby; Hello Dr. Warby; Dr. Warby; etc.

Chemistry 3101 Organic Chemistry Lab I Fall 2011

Dr. Sam Cron Office LSE 514
scron@astate.edu 972-3319

Office hours: M&W:1-2, T: 2-3, R:12-2, and by appointment

Required Materials: bound notebook, safety glasses

Course Description: This course is designed to familiarize students with the techniques used in the preparation, purification and analysis of organic compounds.

Course Outcome: Instrumentation Use: Students should demonstrate the appropriate use of and the ability to troubleshoot modern research laboratory instrumentation and specialized apparatus.

Safety: The organic chemistry laboratory contains a number of chemicals which are toxic and/or flammable. For these reasons, I will enforce the following simple rules in order for you to have a safe laboratory experience:

Phones are not a part of this lab. Receiving or making phone calls or text messages will not be tolerated. Phones should be turned off or on silent mode and should be placed in your pocket, purse, backpack or somewhere out of sight.

No food or drinks are allowed in the lab.

Safety glasses are required and must be worn while in the lab. If I see you with your safety glasses off after the first 5 minutes of a lab, I will ask you to leave the laboratory. You will receive a grade of zero on the laboratory and you will not be allowed to make up the lab!

No flames without permission. Typically, you will not need flames for these experiments. If you do need to use a flame, check first and be sure there are no flammable materials out.

No contact lenses. Wear eyeglasses instead. If chemicals splash in your eyes, contacts can be hard to remove. Also, vapors can be trapped against the eye surface by contact lenses.

Proper attire is required. Sandals, flip flops, shorts, earrings and necklaces that dangle are all prohibited.

Don't work in the lab alone. Don't perform unauthorized experiments. Wear appropriate clothing.

This lab will be clean when you get here. It should remain clean. If you make a mess, clean it up. If you are unsure of how to proceed, ask the instructor or TA. If you break something, ask for help. Do not pick up broken glass with your hands.

Many labs will be performed with a partner. Unless otherwise directed, there will be a maximum of one group of three in the lab. It is not your partner's responsibility to do everything that is associated with the lab. You must be an active participant. Also, you should work at **your** lab station (or your partner's).

Most labs will be turned in at the end of the lab period. If you are instructed to hold a lab until the next lab period, it is your responsibility to get that lab to me or the TA when it is due. You will be penalized

10 points for every day it is late. This means that if you are going to miss lab, you need to make arrangements to get the lab turned in on time. No excuses. Also, do not depend on your lab partner to be here every week. Do not send your data home with them and expect them to show up with the completed lab the following week. You will be disappointed.

Hold all of your graded labs until the end of the semester. If there is a grade discrepancy, you will have a record of your performance. There will be a lab sign-in sheet for each lab period. You are not here until you sign it. Remember, you must sign it and not allow your friend or lab partner to do so.
There is one scheduled period for make–up labs. This time is for the completion of **one** lab of the instructor's choice. If you miss more than three labs you will receive an "F" for the lab course. Important information is detailed during the first few minutes of the period. Also, lab quizzes will be completed at the beginning of lab. There is no makeup for the quizzes. So, be on time!

Grading: Grades will be determined by the 9 lab grades, lab notebook grades, lab quiz grades and a conduct/participation grade. You will have one lab period to make up a single missed lab.
Grades breakdown as follows: A–≥90–%, B–80–89%, C–70–79%, D–60–69%, F–≤59%.

Laboratory Notebooks: Periodically during the semester I will be inspecting your laboratory notebooks. Your laboratory notebook will be a BOUND notebook; it will NOT be ANY of the following:
- A 3-ring binder - A spiral notebook - A folder

The laboratory notebook will be kept in INK. Data that is written in it that is incorrect will be crossed out with a single line and the new data written in beside it. You are to have your notebook with you at each meeting of the lab - if I decide to check notebooks and you do not have yours you will lose points. The lab notebook is a legal document in laboratories in academia, industry, and government - please treat yours with this level of respect. The first two pages of your lab notebook will be used for the table of contents. The table of contents will contain text chapter, experiment number, experiment title, and your notebook page number. The format for your lab notebook is outlined below.

1. Title of Experiment
2. Source.
3. Chemical Equations: For experiments where a product is to be turned in show two chemical equations, one with structural formulas and a balanced equation with molecular formulas. For experiments in which test reactions are run, only the structural formula equation is necessary. If the reaction is run for a series of compounds, a general formula may be used. If no chemical reaction is being run, write "N. A."
4. Procedure: Record the procedure AS YOU DID IT (including any modifications from the text!). Use the past tense. Use information from the text, handouts, prelab lectures, and any other deviations from the procedure outlined in the text that you are aware of.
5. Data: This should include all weights and measurements for starting materials and products. NO DATA SHOULD EVER BE COPIED ONTO ANOTHER PIECE OF PAPER AND ENTERED INTO THE NOTEBOOK LATER.
6. Data Analysis: This section should include theoretical yields, percent yields, graphs, identification of unknowns, or other conclusions. Mathematical equations for all calculations MUST BE SHOWN!!

Samples: If you are to submit a sample with your lab, it should have the following information on it:

Name Experiment # Name of Compound (or, in some cases, structures)
Yield of product Tare of vial

Part of your grade for certain labs will be based on yield and purity of product.

All labs will be placed in the course documents section of Blackboard 8. If you do not have access to this class on Blackboard 8, let me know. You must have a printed copy of the lab and you should read the lab prior to your lab period.

Lab schedule:

Lab 1 Melting Points
Lab 2 Crystallization and Sublimation of Benzoic acid
Lab 3 Simple Distillation
Lab 4 Fractional Distillation
Lab 5 Extraction of Benzoic Acid from a Mixture
Lab 6 Bromination of Cholesterol
Lab 7 Isolation and Extraction of Citral
Lab 8 Cyclohexene from Cyclohexanol and GC Analysis
Lab 9 S_N2 Reaction - Preparation of 1-Bromobutane
Lab 10 Thin Layer Chromatography

Organic Chemistry I (CHEM 3103)

Syllabus – Fall 2011

PROFESSOR: Allyn Ontko, Ph.D. E-mail: aontko@astate.edu
Phone: 870-972-3472
Office: 548 LSW
Office Hours: M & W from 1 - 2pm
LECTURE: MWF 8:00 – 8:50 am in 219 LSE
COURSE DESCRIPTION: An introduction to organic chemistry including molecular structure, bonding, nomenclature, reaction types and current methods employed in chemical research.
PREREQUISITES: CHEM 1021 and 1023
TEXTBOOKS: McMurry, Organic Chemistry, 7th Edition, Brooks/Cole, 2007
GRADING: The course grade is based on **400 total points**
1. There will be four unit exams throughout the semester worth 100 points each.
2. The final exam is optional, cumulative, and may be used to replace one of your 100 point hourly exam scores. Be aware, the final is not easy.
3. Grades will be determined using the following points scale: ***NO exceptions will be made***.

A = 340 – 400 points (85%)
B = 300 – 339 points (75 – 84.9%)
C = 240 – 299 points (60 – 74.9%)
D = 200 – 239 points (50 – 59.9%)

EXAMINATION RULES:
1. Exam dates will be announced in class and on Blackboard.
2. No makeup exams will be allowed except under EXTREME circumstances.
3. ***If you arrive for an exam after at least one student has turned in the exam, you will not be admitted and will be assigned a zero for that exam.***
4. Be sure to use the restroom prior to starting the exam. You will not be allowed to leave and re-enter unless you have a verifiable medical excuse from a physician.
5. ***Questions on later exams may refer to earlier material****.*
6. *Changes in material will be discussed in lecture and will supercede this syllabus!*

TIPS FOR SUCCESS: Keep pace with the course!!! The study of science requires practice. Trying to catch up the night before an exam seldom produces an outstanding score. ***Reading the required sections in the book before each lecture is advised***. Second, recognize your weaknesses and see me for help. My examinations tend to require a bit of thought rather than just brute memorization, so expect to think.

EXTRA CREDIT: NONE. Please do not ask for extra credit.
COURSE DISTRACTIONS: Cell phones, mp3, and other electronics can be a distraction in lecture. ***Please turn off cell phones when you enter the classroom.*** If I see a cell phone visable, you will be asked to remove it from sight or to leave the classroom.
ACADEMIC DISHONESTY: All *Cheating and Plagiarism are NOT acceptable.* The University Honor Code will be strictly enforced.
See: http://www.clt.astate.edu/mpitts/academic_integrity_policy.htm
STUDENTS WITH DISABILITIES: Students who require academic adjustments in the classroom due to a disability MUST register with Disability Services. Disability Services

is located in Suite 2181 of the Student Union Building. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodations to ensure equal access to this course.

INCLEMENT WEATHER: ASU remains open for academic classes and all other services during inclement weather except in extreme circumstances determined solely by the president of the university. Regional and local news media will publicize the closing. Commuter students are encouraged to use good judgment in deciding whether to drive to campus during inclement weather. In those cases where the decision is made not to travel to campus under this policy, it is the responsibility of the student to immediately contact each of his/her professors upon return. ***The student is responsible for all missed assignments during inclement weather*** within a time frame to be determined by the professor.

Note: Dr. Ontko does not permit audio or video recording of his lectures without prior authorization from both he and Arkansas State University.

UNIT 1: Review and Intro to Organic chemistry and nomenclature (Ch 1-4)
UNIT 2: Structure & Reactivity: Alkenes and Alkynes (Ch 5-8)
UNIT 3: Stereochemistry and mechanistic chemistry (Ch 9-11)
UNIT 4: Spectroscopic Identification (Ch 12 & 13)

Tentative Schedule*

Week Monday Wednesday Friday
Aug 22 – 26 Intro Ch 1 Ch 1
Aug 29 – Sept 2 Ch 2 Ch 2 Ch 3
Sept 5 – 9 LABOR DAY Ch 3 Ch 4
Sept 12 – 16 Ch 4 Review **EXAM I**
Sept 19 – 23 Ch 5 Ch 5 Ch 6
Sept 26 – 30 Ch 6 Ch 7 Ch 7
Oct 3 – 7 Ch 8 Ch 8 Review
Oct 10 – 14 EXAM II Ch 9 Ch 9
Oct 17 – 21 Ch 9 Ch 10 Ch 10
Oct 24 – 28 Ch 10 Ch 11 Ch 11
Oct 31 – Nov 4 Ch 11 Review **EXAM III**
Nov 7 – 11 Ch 12 Ch 12 Ch 12
Nov 14 – 18 Ch 13 Ch 13 Ch 13
Nov 21 – 25 FALL BREAK FALL BREAK FALL BREAK
Nov 28 – Dec 2 Ch 13 Review **EXAM IV**
Dec 5 – Dec 9 Study Day FINAL

*** Any changes will be discussed in class. Students are responsible for all changes announced during class time.**

****FINAL EXAM: Wednesday, December 7th 8:00 – 10:00 am.**

Chemistry 3111-001 Organic Chemistry II Lab Fall 2011
Dr. Sam Cron Office LSE 514
scron@astate.edu 972-3319

Office hours: M&W:1-2, T: 2-3, R:12-2, and by appointment

Required Materials: bound notebook, safety glasses

Course Description: This course is designed to familiarize students with the techniques used in the preparation, purification and analysis of organic compounds.

Course Outcome: Instrumentation Use: Students should demonstrate the appropriate use of and the ability to troubleshoot modern research laboratory instrumentation and specialized apparatus.

Safety: The organic chemistry laboratory contains a number of chemicals which are toxic and/or flammable. For these reasons, I will enforce the following simple rules in order for you to have a safe laboratory experience:

Phones are not a part of this lab. Receiving or making phone calls or text messages will not be tolerated. Phones should be turned off or on silent mode and should be placed in your pocket, purse, backpack or somewhere out of sight.

No food or drinks are allowed in the lab.

Safety glasses are required and must be worn while in the lab. If I see you with your safety glasses off after the first 5 minutes of a lab, I will ask you to leave the laboratory. You will receive a grade of zero on the laboratory and you will not be allowed to make up the lab!

No flames without permission. Typically, you will not need flames for these experiments. If you do need to use a flame, check first and be sure there are no flammable materials out.

No contact lenses. Wear eyeglasses instead. If chemicals splash in your eyes, contacts can be hard to remove. Also, vapors can be trapped against the eye surface by contact lenses.

Proper attire is required. Sandals, flip flops, shorts, earrings and necklaces that dangle are all prohibited.

Don't work in the lab alone. Don't perform unauthorized experiments. Wear appropriate clothing.

This lab will be clean when you get here. It should remain clean. If you make a mess, clean it up. If you are unsure of how to proceed, ask the instructor or TA. If you break something, ask for help. Do not pick up broken glass with your hands.

Many labs will be performed with a partner. Unless otherwise directed, there will be a maximum of one group of three in the lab. It is not your partner's responsibility to do everything that is associated with the lab. You must be an active participant. Also, you should work at **your** lab station (or your partner's).

Most labs will be turned in at the end of the lab period. If you are instructed to hold a lab until the next lab period, it is your responsibility to get that lab to me or the TA when it is due. You will be penalized

10 points for every day it is late. This means that if you are going to miss lab, you need to make arrangements to get the lab turned in on time. No excuses. Also, do not depend on your lab partner to be here every week. Do not send your data home with them and expect them to show up with the completed lab the following week. You will be disappointed.

Hold all of your graded labs until the end of the semester. If there is a grade discrepancy, you will have a record of your performance. There will be a lab sign-in sheet for each lab period. You are not here until you sign it. Remember, you must sign it and not allow your friend or lab partner to do so.
There is one scheduled period for make–up labs. This time is for the completion of **one** lab of the instructor's choice. If you miss more than three labs you will receive an "F" for the lab course. Important information is detailed during the first few minutes of the period. Also, lab quizzes will be completed at the beginning of lab. There is no makeup for the quizzes. So, be on time!

Grading: Grades will be determined by the 9 lab grades, lab notebook grades, lab quiz grades and a conduct/participation grade. You will have one lab period to make up a single missed lab.
Grades breakdown as follows: A–≥90–%, B–80–89%, C–70–79%, D–60–69%, F–≤59%.
Laboratory Notebooks: Periodically during the semester I will be inspecting your laboratory notebooks. Your laboratory notebook will be a BOUND notebook; it will NOT be ANY of the following:

- A 3-ring binder - A spiral notebook - A folder

The laboratory notebook will be kept in INK. Data that is written in it that is incorrect will be crossed out with a single line and the new data written in beside it. You are to have your notebook with you at each meeting of the lab - if I decide to check notebooks and you do not have yours you will lose points. The lab notebook is a legal document in laboratories in academia, industry, and government - please treat yours with this level of respect. The first two pages of your lab notebook will be used for the table of contents. The table of contents will contain text chapter, experiment number, experiment title, and your notebook page number. The format for your lab notebook is outlined below.

1. Title of Experiment
2. Source.
3. Chemical Equations: For experiments where a product is to be turned in show two chemical equations, one with structural formulas and a balanced equation with molecular formulas. For experiments in which test reactions are run, only the structural formula equation is necessary. If the reaction is run for a series of compounds, a general formula may be used. If no chemical reaction is being run, write "N. A."
4. Procedure: Record the procedure AS YOU DID IT (including any modifications from the text!). Use the past tense. Use information from the text, handouts, prelab lectures, and any other deviations from the procedure outlined in the text that you are aware of.
5. Data: This should include all weights and measurements for starting materials and products. NO DATA SHOULD EVER BE COPIED ONTO ANOTHER PIECE OF PAPER AND ENTERED INTO THE NOTEBOOK LATER.
6. Data Analysis: This section should include theoretical yields, percent yields, graphs, identification of unknowns, or other conclusions. Mathematical equations for all calculations MUST BE SHOWN!!

Samples: If you are to submit a sample with your lab, it should have the following information on it:

Name Experiment # Name of Compound (or, in some cases, structures)
Yield of product Tare of vial

Part of your grade for certain labs will be based on yield and purity of product.

All labs will be placed in the course documents section of Blackboard 8. If you do not have access to this class on Blackboard 8, let me know. You must have a printed copy of the lab and you should read the lab prior to your lab period.

Lab Schedule:

Lab 1 NMR and IR spectroscopy of unknowns.

Lab 2 Nitration of Methyl Benzoate.

Lab 3 Friedel – Crafts Alkylation – Preparation of 1,4-di-tert-butylbenzene

Lab 4 Borohydride Reduction of a Ketone

Lab 5 Esterification – Preparation of n-Butyl Acetate

Lab 6 Preparation of Aspirin

Lab 7 Ester hydrolysis – Preparation of Soap

Lab 8 Dibenzalacetone by Aldol Condensation, ALSO set up Fermentation of Sucrose

Lab 9 Finish Fermentation of Sucrose

Chemistry 3113 Organic Chemistry II

Instructor: Dr. Michael Panigot
Office: 517 Lab Sciences East
Phone: 972-3494
e-mail: mpanigot@astate.edu
Office Hours: MWF 10:00 – 11:50, also by appointment
Class Meets: LSE 206, 9:00-9:50 MWF
Prerequisite: Chemistry 3101 and 3103
Text: McMurry, Organic Chemistry, 7th Edition, Brooks/Cole, 2008 (previous editions OK)

Course Description: Chemistry 3103 and 3113 provide a one year course covering the principal aspects of organic chemistry nomenclature, compounds, and reactions.

Course Objectives: The course is designed to present topics in organic chemistry including modern methods used to determine the structure of organics, the chemistry of aromatic compounds, the chemistry of carbonyl compounds, alcohols, amines, and the structure and chemistry of biomolecules.

Chemistry Learning Outcomes/Objectives: Describe observed and modeled chemical phenomena using fundamental chemical principles and algebra based mathematics

Course Outline (Tentative):

Week #	Chapter	Topic
1,2	14	Conjugated Dienes
2	15	Benzene & Aromaticity
3,4	16	Chem. Of Benzene: Electrophilic Aromatic Substitution
5	17	Alcohols & Phenols
6	18	Ethers, Epoxides, Thiols, & Sulfides
7,8	19	Aldehydes & Ketones - Nucleophilic Addition
9	20	Carboxylic Acids
10	21	Carboxylic Acid Deriv's - Nucleophilic Acyl Subst.
11	22	Carbonyl Alpha Substitution Reactions
12	23	Carbonyl Condensation Reactions
13	24	Amines
14	25-28	Overview of Biomolecules

Homework: Homework will not be collected or graded. It is to your advantage to work the end of section and end of chapter problems to check your understanding of the material. Quiz and exam questions may come directly from or be based on homework material.

Quizzes: Quizzes will be given weekly during weeks when there is not an exam scheduled for a total of 10 quizzes that will be counted. Each quiz will be worth 10 points making 100 points from quizzes possible. I will try to provide extra quizzes so **NO MAKE-UP QUIZZES WILL BE PROVIDED unless you are gone on *documented* University business and arrangements are made with me PRIOR TO the scheduled date and time for the quiz.**

Exams: Exams will be given approximately every 4 weeks according to this schedule:

Exam I	Fri. Sept. 16, 2011
Exam II	Fri. Oct. 14, 2011
Exam III	Fri. Nov. 11, 2011
Exam IV	Mon. Dec. 5, 2011 (last day)

Exams will be worth 100 points making a total of 400 points from exams possible. They will be written to take not longer than 50 minutes to complete and a time limit will be imposed. They will be based in part on the quizzes, however, some questions will be more difficult than quiz questions. **(over)**

Final Exam: The final exam will be worth 100 points. It will be a comprehensive final and will be given **Fri., Dec. 9, 2011 8:00 - 10:00 AM**

Makeup Exam Policy: If you know in advance that you will not be able to be present for an exam, please let me know as soon as possible. Under these circumstances I will let you make up the exam within a week of the scheduled exam date. IF YOU DO NOT MAKE UP THE QUIZ/EXAM WITHIN ONE WEEK A GRADE OF ZERO WILL BE ENTERED. If you are absent due to illness I will need a signed medical excuse and you will be able to make up the exam within one week of the scheduled date. In all other cases NO MAKE-UP EXAMS WILL BE GIVEN!!!

Grading: Grades are based on the total number of points possible. Points are distributed as shown:

10 quizzes @ 10 points each:	**100 points**
4 exams @ 100 points each:	**400 points**
Final Exam @100 points each:	**100 points**
Total:	**600 points**

Tentatively, grade cutoffs will be according to the following scheme:

88% to 100% = A
76% to 88% = B
63% to 76% = C
50% to 63% = D

Depending on class performance, the scale may be lowered but will not be raised above these values.

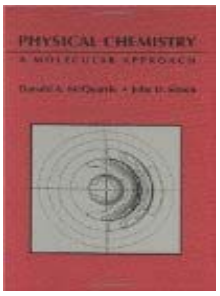
Academic Dishonesty: Please see http://studentconduct.astate.edu/AcademicIntegrity.html for details of academic dishonest6y and integrity. If I find anyone cheating they will initially be warned that if they are caught a second time they will receive a letter grade of F for my course.

Information for Students with Disabilities: Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements will be made to ensure equal access to this course.

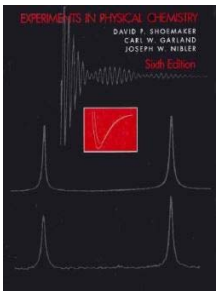
Syllabus
PHYSICAL CHEMISTRY CRN: 60153 - CHEM 3124

Instructor: Dr. Hashim M Ali; *hali@astate.edu*
Office: LSE 513 ph: 870 972 3215
Lecture: MWF; 10:00-10:50 am LSE 206
Laboratory: W, 2-5 pm, LSE 508
Office hours: TR: 2-4 pm

Textbooks :



Required: Physical Chemistry: A Molecular Approach, Donald McQuarrie and John Simon; ISBN 0-935702-99-7
Recommended: Experiments in Physical Chemistry, Shoemaker, Garland, and Nibler : ISBN 0-07-057074-4



Course objective
The objective of this course is to develop the "*foundations of quantum chemistry*", in relation to the interaction of energy and matter between simple and complex chemical systems.

Learning objective:
The following are learning objectives that are expected of the students after taking this course:

1. Develop an understand of the interaction of energy and matter as explained by quantum chemistry
2. Apply quantum chemistry to a simple system (The Hydrogen Atom)
3. Effectively use quantum chemistry to explain chemical bonding structure in complex systems (Diatomic molecules)

The course and learning objectives will be monitored by administering assignments and exams and other forms of analysis to give an overall grade for the course.
The grade comes from a total score that is derived from the following:

1. Three Exams 45%
2. Laboratory grade 15%
3. Final Exam 30%
4. Class participation 10 %

Grading
Individuals final grades be based in the percentages of possible points earned. (Exams and laboratory scores) as outlines in the table below"

Percentage of total points earned (%)	Grade
Above 90%	A
Between 80-89	B
Between 70-79	C
Between 60-69	D
Less than 60.	F

Problem sets/homework:

Problem sets will be assigned on an approximately weekly basis. Homework will not be collected and graded. However, I strongly recommend you keeping up with the homework assignments as they will form the basis for the questions on the exam.

Policy on make-up work:

Policy on absences/make-up exams: There will be no make-up exams unless the absence is the result of an official ASU activity. Missed exams will be handled on an individual basis. However, if you cannot make a scheduled exam time, you must make alternative arrangements with the instructor ***at least one week prior to the scheduled exam***. In other words, you will not be allowed to make-up an exam after the scheduled exam date.

Use of Blackboard

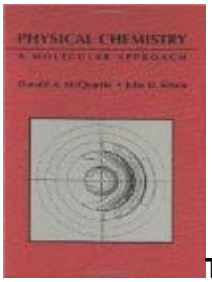
I will be using Blackboard (http://blackboard.astate.edu/) throughout the semester to post announcement. During lecture, I will try to tell you if I have posted anything new. Posted items will be in PDF format. You must have a program called Adobe Acrobat Reader installed on computer you are using to view or print the handouts. Adobe Acrobat can be found for free at: http://its.astate.edu/content/softwaredownloads/ .

Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodations. Appropriate arrangements can be made to ensure equal access to this course.

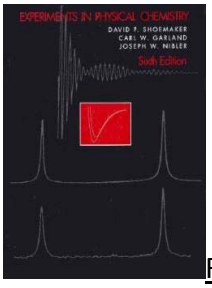
Syllabus

PHYSICAL CHEMISTRY II CRN: 10989 - CHEM 3134

Instructor: Dr. Hashim M Ali; *hali@astate.edu*
Office: LSE 513 ph: 870 972 3215
Lecture: MWF; 10:00-10:50 am LSE 508
Laboratory: W, 2-4 pm, LSE 508
Office hours: TR: 2-4 pm



Textbooks :



Required: Physical Chemistry: A Molecular Approach, Donald McQuarrie and John Simon; ISBN 0-935702-99-7

Recommended: Experiments in Physical Chemistry, Shoemaker, Garland, and Nibler : ISBN 0-07-057074-4

Course objective

The objective of this course is to extend the "*foundations of quantum chemistry* to the interaction of energy and matter between simple and complex chemical systems .

Learning objective:

The following are learning objectives that are expected of the students after taking this course:

- Develop an understanding of the interaction of electromagnetic radiation with atoms and molecules.

- Study the various properties of systems in equilibrium by using thermodynamics laws phase equilibria and chemical kinetics

The course and learning objectives will be monitored by administering assignments and exams and other forms of analysis to give an overall grade for the course.

The grade comes from a total score that is derived from the following:

- Three Exams 45%
- Laboratory grade 15%
- Final Exam 30%
- Class participation 10 %

Grading

Individuals final grades be based in the percentages of possible points earned. (Exams and laboratory scores) as outlines in the table below"

Percentage of total points earned (%)	Grade
Above 90%	A
Between 80-89	B
Between 70-79	C
Between 60-69	D
Less than 60.	F

Problem sets/homework:

Problem sets will be assigned on an approximately weekly basis. Homework will not be collected and graded. However, I strongly recommend you keeping up with the homework assignments as they will form the basis for the questions on the exam.

Policy on make-up work:

Policy on absences/make-up exams: There will be no make-up exams unless the absence is the result of an official ASU activity. Missed exams will be handled on an individual basis. However, if you cannot make a scheduled exam time, you must make alternative arrangements with the instructor ***at least one week prior to the scheduled exam***. In other words, you will not be allowed to make-up an exam after the scheduled exam date.

Use of Blackboard

I will be using Blackboard (http://blackboard.astate.edu/) throughout the semester to post announcement. During lecture, I will try to tell you if I have posted anything new. Posted items will be in PDF format. You must have a program called Adobe Acrobat Reader installed on computer you are using to view or print the handouts. Adobe Acrobat can be found for free at: http://its.astate.edu/content/softwaredownloads/ .

Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodations. Appropriate arrangements can be made to ensure equal access to this course.

CHEMISTRY 3154 Spring 2012
Survey of Physical Chemistry

Instructor: Hideya Koizumi, Ph.D.
Office: 535 LSW **Phone:** (870) 972-2399
E-mail: hkoizumi@astate.edu

Office Hours: T, W, Th 1-2
Others by appointment
Text: *Elements of Physical Chemistry,* by Peter Atkins & Julio de Paula, 5th Edition
(W.H. Freeman and Company, New York 2007)
Text Website: http://bcs.whfreeman.com/elements5e
Other Needs: Scientific Calculator or notebook PC
Bound laboratory notebook

Class Meetings: T-Fri 11:00-11:50 pm LSE 508

Department Objective: Data Analysis (BA)
Basic understanding of Thermodynamics, Kinetics, and Quantum Mechanics
View chemistry in "macro" and "micro" point of view
Assessment method: quizzes, test, and lab reports

SCHEDULE FOR TOPICS AND EXAM DATES (Tentative)

DATES TOPICS CHAPTERS
1/17 - 2/2 Thermodynamics
Chapter 2, 3, and 4
3 Quiz in class
2/3 (Fri) **Midterm EXAM 1**
2/7 - 3/1 Gibbs free energy and Kinetics
Chapter 5, 6, 7, 10, 11 Optional material (CH8-9)
5 Quiz given in class
3/2 (Fri) **Midterm EXAM 2**
3/6 – 4/4 Quantum Mechanics
Chapter 12, 13, 14, 15
4 Quiz given in class
Spring Break 3/19-25---No class
4/6 (Fri) **Midterm EXAM 3**
4/10-4/11 Statistaical Thermodynamics & Special Topics TBA
CH 22
2 Quiz given in class
4/20 (Fri) **Midterm EXAM 4**
4/24-27
Review
Final Week 5/2-5/8 COMPREHENSIVE FINAL EXAM

You are responsible for reading textbook. Homework problems (about 10 problems) are assigned every Thursday. I will not collect homework. Instead, 20 min quiz will be given each Tuesday at the

end of class from assigned homework. There are total of 14 quizzes available. Only 10 of those will be counted toward your grade. **There will be NO make up quiz.**

Last Day to drop classes without Financial Assessment
Jan 16th
Last Day to drop the class
Feb 15th

Final Lecture Course Grade: Your final Lecture Course grade will be based on:

10 quiz	100pts
4 Midterm Exams	400pts
1 Final Exam	200pts

Total course Grade will be

Your total points / 700pts * 100% =>

A ≥ 90% > B ≥ 80% > C ≥ 70% > D ≥ 60% > F

Plagiarism:

Plagiarism will not be tolerated in this course, a single warning will be administered when a student is caught and the incriminating component of the course work (exam or presentation write-up) will receive zero points of the available. After the single warning the student will be referred to the campus ombudsman and authorities.

Plagiarism occurs in cases such as copied text and answers for homework and exams, as well as unacknowledged use of textbook and literature material.

Cell Phones:

Cell phones should be turned off or silent at the beginning of each class. Students with ringing cell phones, or those answering cell phones, or texting on cell phones will receive automatic 10% deduction from total grade.

Cheating

Cheating will be punished according to student handbook rules.

CHEMISTRY 4224/5224 Fall 2011
Instrumentation

Instructor: Hideya Koizumi, Ph.D.
Office: LSW 330 B Lab, LSW 535, **Phone:** (870) 972-2399

E-mail: hkoizumi@astate.edu

Office Hours: M 10-11 W 10-11 F 11-1

Others by appointment: You can find me at LSW 535.

Text: *Printed documents. Journal articles provided by HK*

Other Recommended Text Book:
[It is highly recommended that you buy one of these]

Principles of Instrumental Analysis,5th edition, D.A. Skoog, F.J. Holler, T.A. Nieman,Saunders College Publishing, New York 1997 (**not required**).

Quantitative Chemical Analysis, by Daniel C. Harris, 7th edition
(W.H. Freeman and Company, New York 2007) (**not required**)

Bound laboratory notebook
[I will print out each lecture note]
Safety goggles

Class Meetings:	T-Th 2:00-3:15pm	LSE 206
Laboratory:	T-Th 3:15-5:50 pm	LSE 505

Department Learning Objectives

BS
Phenomena, software, ethics, Literature search, instrumentation use, instrumentation description, data analysis, and literature review
MS
Content knowledge, critical thinking, reasoning, literature, problem solving, and laboratory

SCHEDULE FOR TOPICS AND EXAM DATES (Tentative)

DATES TOPICS

8/23 Introduction & Course Assessment

8/25 - 9/17 Basic Electronics for Chemist (25, 30, 1, 6, 8, 13) No lab 13th

Noise Filter-theory and application (FFT), Use of linear IC (analog & digital), Microprocessor, Basic Programming, and Logic operator
3xQuiz & 2-3 lab exercises
9/15 (Th) **S-midterm EXAM 1**
9/20 - 10/04 Small Scale Instrumentations (20, 22, 27, 29, 4) No lab 4th
Gas Sensors
Absorption Spectroscopy, FTIR, FFT revisited, review P-Chem, STM, overview microscopes
3xQuiz & 2-3 lab exercises
10/06 (Th) **S-midterm EXAM 2**
10/11 – 10/25 Mass Spec and Related (11, 13, 18, 20, 25)
(Vacuum, TOF, QMF and QIT, ICR, Other related stuff)
IMA, DMA, aerosol instruments as potential topic
11/27-11/16 Separation (27,1, 3, 8, 10, 15) No lab 16th
GC, HPLC, IC, fluidics
5xQuiz over *MS* & Separation
Lab & simulations
11/17 (Th) **L-midterm EXAM 3**

Fall Break 11/19-11/27---No class
***Project Class 11/29**
12/1 Review
Final Week 12/07-12/13 COMPREHENSIVE FINAL EXAM

You are responsible for reading textbook. Homework problems (about 10 problems) are assigned every Thursday. I will not collect homework. Instead, 20 min quiz will be given each Tuesday at the end of class from assigned homework. There are total of 11 quiz available. Only 9 of those will be counted toward your grade. **There will be NO make up quiz.**

Class Project

You must determine your research topic related to instrumentation development of your choice. The topic must be found in journal articles "Chemical Review" from ACS. ASU do not have access to this journal. So you will need to search keyword to make sure your favorite topic is in the review and order through interlibrary loan. The articles generally consist of historical development and current stage of the instrument. (~20-50 pages long) The article must be approved by me by 10/06/2011. Do not plan to come to my office last day. Expect your topic will be rejected once or twice by me. If you fail to choose the acceptable topic or journal article, you will be assigned to my choice of journal articles which may be very difficult to read. Otherwise you will get 0pts for it. Make sure you will obtain the article (which you can read) through interlibrary loan which takes 1 week or so. Once you find the article, you will go through many references (another interlibrary loan opportunity) to write the report (7 pages Times New Roman 12 pts double space, using regular margin) <u>in your own word</u>. Each sentence will be searched over the internet and my co-worker's library network. Any type of "Plagiarism" found in the report is automatic downgrade for the final grade. If "Plagiarism" occurs in the report twice, your grade will be lowered by 2 letter grades. Three or more "Plagiarism" in the report will be automatic "F" for this class. Figures, table, and reference (use endnote) must be handed in as attachment at the end of the report. These Tables, Figures, reference do not count as a part of 7 pages. Six page

reports will be automatic 25% off from your report grade. Five page reports will be 50% off from your report grade. Report less than 5 pages are count as 0 pts. The report is due in class at the day specified above. Each 24 hour delay will count as 10% off from your report grade.

Last Day to drop classes without Financial Assessment
Aug 30th
Last Day to drop the class
Nov 18th

Laboratory Schedules

8/27 Lab check in

8/27-11/19
There will be No Laboratory classes for 9/15, 10/06, 11/17 and Midterm exam days.
There will be 18 Laboratory class meetings.

There will be total of 6-7 experiments with full lab report. Some of which may take 2 meetings.

Final Lecture Course Grade: Your final Lecture Course grade will be based on:

9 quiz	100pts
3 Midterm Exams	350pts (S-midterm 100pts L-midterm 150 pts)
1 Report	150pts
1 Final Exam	200pts

Laboratory 400 pts
Your lab points =400*[Sum(i){Point given to Lab project(i)}/ Sum(i){Point available to Lab project(i)}]

*The determination of the lab grade is explained in the laboratory handout

Total course Grade will be
Your total points / 1200pts * 100% =>

A $\geq$ 90% > B $\geq$ 80% > C $\geq$ 70% > D $\geq$ 60% > F

For Graduate Student Taking This Class
You will be taking 3 extra questions in each Exam.

Plagiarism:

Plagiarism will not be tolerated in this course, a single warning will be administered when a student is caught and the incriminating component of the course work (exam or presentation write-up) will receive zero points of the available. After the single warning the student will be referred to the campus ombudsman and authorities.

Plagiarism occurs in cases such as copied text and answers for homework and exams, as well as unacknowledged use of textbook and literature material.

Cell Phones:

Cell phones should be turned off or silent at the beginning of each class. Students with ringing cell phones, or those answering cell phones, or texting on cell phones will be asked to leave.

Cheating

Cheating will be punished according to student handbook rules.

BIOCHEMISTRY (CHEM 4243)

Syllabus – Fall 2011

PROFESSOR: Allyn Ontko, Ph.D. E-mail: aontko@astate.edu
Phone: 870-972-3472
Office: 548 LSW
Office Hours: M & W 1 - 2 pm or by appointment
LECTURE: MWF 10:00 - 10:50 am in 334 LSW
COURSE DESCRIPTION: Several key areas of modern biochemistry and a description of methods commonly employed in biochemical research will be explored.
COURSE OBJECTIVES: Describe observed and modeled biochemical phenomena using fundamental chemical principles. Connect biological and chemical principles.
PREREQUISITES: CHEM 3113 and 3111
TEXTBOOKS: Principles of Biochemistry 5th edition; by Lehninger, Nelson, Cox; 2005
GRADING:
1. The course grade is based on 400 total points (Four 100 point exams)
2. There will be four exams throughout the semester worth 100 points each.
3. The final exam is optional, cumulative, and may be used to replace only one of your four hourly exam scores. The final is not easy.
4. Course grades will be determined based on the top 4 exam scores (400 total points) using the following points scale. NO exceptions will be made.

A = 340 – 400 points (85%)
B = 300 – 339 points (75 – 84.9%)
C = 240 – 299 points (60 – 74.9%)
D = 200 – 239 points (50 – 59.9%)

EXAMINATION RULES:
1. Exam dates will be discussed in class and posted on Blackboard.
2. Questions on later exams may refer to material from earlier in the course.
3. Be sure to use the restroom prior to starting the exam. You will not be allowed to leave and re-enter unless you have a verifiable medical excuse from a physician.
4. ***If you arrive for an exam after at least one student has turned in the exam, you will be assigned a zero for that exam.***
5. No makeup exams or permission to take an exam early will be allowed. *Arrangements may be made for students with extreme circumstances.*
6. Disputes on exam grades must be resolved *within 1 week of the exam's return.*
7. *Changes in material will be discussed in lecture and will supercede this syllabus!*

TIPS FOR SUCCESS: Keep pace with the course!!! The study of science requires practice. Trying to catch up the night before an exam seldom produces an outstanding score. ***Read the required chapters in the book before each lecture!*** Second, recognize your weaknesses and see me for help. My examinations tend to require a bit of thought rather than just brute memorization, so expect to think.
EXTRA CREDIT: NONE. Please ***do not ask*** for extra credit. If you prepare well and study hard you will not need it.
COURSE DISTRACTIONS: Cell phones, mp3, and other electronics can be a distraction in lecture. ***Please turn off cell phones when you enter the classroom.*** **If I see your cell phone you will be asked to leave the classroom.**
ACADEMIC DISHONESTY: All *Cheating and Plagiarism are NOT acceptable.* The

University Honor Code will be strictly enforced.
See: http://www.clt.astate.edu/mpitts/academic_integrity_policy.htm
STUDENTS WITH DISABILITIES: Students who require academic adjustments in the classroom due to a disability MUST register with Disability Services. Disability Services is located in Suite 2181 of the Student Union Building. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodations to ensure equal access to this course.
INCLEMENT WEATHER: ASU remains open for academic classes and all other services during inclement weather except in extreme circumstances determined solely by the president of the university. Regional and local news media will publicize the closing. Commuter students are encouraged to use good judgment in deciding whether to drive to campus during inclement weather. In those cases where the decision is made not to travel to campus under this policy, it is the responsibility of the student to immediately contact each of his/her professors upon return. ***The student is responsible for all missed assignments during inclement weather*** within a time frame to be determined by the professor.
Note: Dr. Ontko does not permit audio or video recording of his lectures without prior authorization from both he and Arkansas State University.

Tentative Schedule*

Week Monday Wednesday Friday
Aug 22 – 26 INTRO Ch 2: Acid/Base Chemistry
Ch 2: Acid/Base Chemistry
Aug 29 – Sept 2 Review Check Ch 3: Amino Acids Ch 3: Amino Acids
Sept 5 – 9 LABOR DAY Ch 4: Protein Structure Ch 4: Protein Structure
Sept 12 – 16 Ch 5: Protein Function Ch 5: Protein Function Ch 6: Enzymes
Sept 19 – 23 Ch 6: Enzymes Ch 6: Enzymes **EXAM I**
Sept 26 – 30 Ch 7: Carbohydrates Ch 7: Carbohydrates Ch 8: Nucleic Acids
Oct 3 – 7 Ch 8: Nucleic Acids Ch 10: Lipids Ch 11: Membranes
Oct 10 – 14 Ch 13: Bioenergetics Ch 13: Bioenergetics **EXAM II**
Oct 17 – 21 Ch 14: Glycolysis Ch 14: Glycolysis
Ch 14: Gluconeogenesis & Pentose Phosphate
Oct 24 – 28 Ch 15: Metabolic Regulation
Ch 15: Metabolic Regulation
Ch 16: PDH
Oct 31 – Nov 4 Ch 16: Citric Acid Cycle Ch 16: Citric Acid Cycle Ch 16: Citric Acid Cycle
Nov 7 – 11 EXAM III Ch 17: Fatty Acid Catabolism
Ch 17: Fatty Acid Catabolism
Nov 14 – 18 Ch 18: Amine transport Ch 18: Urea Cycle
Ch 18: Amino Acid Oxidation
Nov 21 – 25 FALL BREAK FALL BREAK FALL BREAK
Nov 28 – Dec 2 Ch 19: Oxidative Phosphorylation
Ch 19: Oxidative Phosphorylation

Ch 19: Oxidative
Phosphorylation
Dec 5 – Dec 9 EXAM IV
Dec 12 FINAL
*** Any changes will be discussed in class. Students are responsible for all changes announced during class time.**
****FINAL EXAM: Monday, December 12th 10:15 am – 12:15 pm.**

CHEM 427V(1-3) Research in Chemistry Agreement

This form must be completed by the student and faculty research advisor. It must be signed by the student and advisor, and submitted to the Chair of the Department of Chemistry & Physics by 5:00 PM of the third day of the term in which the student has registered for CHEM 427V.

Student Name:					
Student ID:					
Research Advisor:					
Year:					
Term:					
# Credit Hours:					
Days Working:	M	T	W	Th	F
Hours Working:					
Research Title:					
Research Description:					
CRN: (entered by office personnel)					

Students registering for CHEM 427V must complete a minimum of 3 hours of research per week per registered credit hour. The student will provide a summary report of the completed research. This report will be a minimum of one page per registered credit hour (typed, single spaced, 12 point font, one inch margins) in length, and tables, figures, equations, formatting (i.e. section headings/titles) and references will not constitute any portion of the required length. The report must be approved by the advisor, and submitted to the Chair of the Department of Chemistry & Physics at least three days prior to end of the term in which the student has registered for CHEM 427V. The summary report must be submitted to the Department Chairman before course credit will be awarded.

By signing this document the student agrees to perform the research described above according to terms of this document. Moreover, the student realizes failure to satisfy these terms may result in a failing grade for this section of CHEM 427V.

Student signature	**Instructor signature**	**Chair signature**
Date	**Date**	**Date**

CHEMISTRY SEMINAR CRN 60158 CHEM 4281

Instructor: Dr. Hashim M Ali; *hali@astate.edu*
Office: LSE 513 ph: 870 972 3215
Seminar/Meeting: M; 12:00-12:50 am LSE 206
Pre requisites: Third hour of CHEM 427V

Course objectives

Develop skills in the oral and written presentation of scientific research including accepted presentation techniques, listening skills, critical analysis of scientific presentation and participation in scientific discussions.

Learning outcomes

1. Effectively communicate scientific information in written and oral forms to various audiences (from laypersons to scientific).
2. Demonstrate an ability to listen to a scientific presentation, critically evaluate the research and to ask relevant questions regarding the material presented.

Attendance:

Since participation is an important part of the course grade, students are expected to attend ALL class sessions.

Exams

There will be no examination in this course. Grading will be based on attendance, course participation and completion of requirements given during presentations.

Plagiarism

Plagiarism will not be tolerated. Any and all cases of plagiarism will be dealt with severely with the *minimum* penalty being a grade of 0 for the assignment in question. Cases may be referred to the Department Chair or Dean for further disciplinary action.

SYLLABUS

PHARMACOLOGY – BIO 4143/5143 or CHEM 4343/5343

Spring 2012

Required Textbook: Brody's Human Pharmacology, Molecular to Clinical, 5th Edition. Minneman, KP & Wecker, L (eds.).Elsevier Mosby, 2010

Lectures: T R 11:00 – 12:15 -- Room LSW 444

Grading: Four semester exams (including final exam) - **100 points each**

Some exam grades may include a short paper or presentation as part of the 100 pts

Graduate students are expected to give a presentation as part of their course responsibility.

Quizzes may be introduced at each instructor's discretion

Grading scale: A = 90-100%
B = 80-89.9%
C = 70-79.9%
D = 60-69.9%
F = ≤59.9%

PLEASE NOTE: University policy dictates that the final exam MUST be taken at the scheduled time and date. There will be NO exceptions.

This is a team-taught course; faculty participants are:

Dr. Anne Grippo (course coordinator)
216 ABI OR 330C Lab Sciences West
972-3493 OR 972-3082
agrippo@astate.edu

Dr. David Gilmore
418 Lab Sciences East
972-3263 OR 972-3082
dgilmore@astate.edu

Dr. Richard Grippo
316 Lab Sciences East
972-3649 OR 972-3082
rgrippo@astate.edu

Dr. Malathi Srivatsan
214 ABI OR LSW 547
972-3167 OR 972-3082
msrivatsan@astate.edu

Availability of lecture notes via Blackboard will differ with each instructor. Students will be informed prior to each instructor's lectures regarding reading requirements, lecture notes, test format, etc. *It is expected that students will read the appropriate chapters of the textbook for each topic.* The course coordinator will attend lectures and review test questions to smooth transitions between instructors and to assure continuity.

Course Goals: In concurrence with the basic principles of Biology which are the pillars and goals of the ASU Department of Biological Sciences, successful Pharmacology students will:

1. Understand energy flow, genetics and biological machinery
2. Apprehend structure & function, and systems
3. Obtain a clear understanding of the nature of living organisms & biological processes
4. Appreciate and participate in the interdisciplinary nature of scientific research, its outcomes and applications, cultivating a commitment to scientific ethics
5. Communicate to share knowledge with peers and faculty
6. Fine-tune intellectual and practical skills to be successful in graduate/professional school and/or a chosen career

Course Objectives: Following completion of this course, Pharmacology students will:

1. Comprehend the absorption and metabolism of exogenous agents in humans, and recognize the physical/chemical properties of drugs that are important to activity
2. Review drugs important to the nervous and cardiovascular systems and evaluate their interactions
3. Compare drugs that kill endogenous vs. exogenous invaders
4. Integrate information about the human body, pathology and chemotherapy

ASU ACADEMIC POLICIES AND PROCEDURES

Class Attendance Policy

Students should attend every lecture, recitation, and laboratory session of every course in which they are enrolled. Students who miss a class session should expect to make up missed work or receive a failing grade on missed work. It is the practice of Arkansas State University to allow students to participate in university-sponsored events, even when those events cause them to be absent from class. Students participating in university-sponsored events will be given reasonable opportunities to make up missed assignments and exams.

In determining whether excessive absences should result in a failing grade, consideration shall be given to the maturity and class standing of the student, the quality of academic work being accomplished by the student, and extenuating circumstances related to such absence.

Students enrolled in junior or senior level courses numbered 3000 or 4000 will not be assigned a grade of "F" solely for failing to attend classes. However, instructors will set forth at the beginning of the semester their expectations with regard to make-up policy for work missed, class participation and other factors that my influence course grades.

Inclement Weather Policy

The university remains open for academic classes and all other services during inclement weather except in extreme circumstances determined solely by the president of the university. Regional and local news media will publicize the closing. Commuter students are encouraged to use good judgment in deciding whether to drive to campus during inclement weather. In those cases where the decision is made not to travel to campus under this policy, it is the responsibility of the student to immediately contact each of his/her professors upon return to explain the circumstances and to determine the need to complete any missed assignments. The student is responsible for all missed assignments during inclement weather within a time frame to be determined by the professor.

Academic Integrity Policy

Arkansas State University enthusiastically promotes academic integrity and professional ethics among all members of the ASU academic community. Violations of this policy are considered as serious misconduct and may result in disciplinary action and severe penalties.

A. Plagiarism

Plagiarism is the act of taking and/or using the ideas, work, and/or writings of another person as one's own.

1. To avoid plagiarism, give written credit and acknowledgment to the source of thoughts, ideas, and/or words, whether you have used direct quotation, paraphrasing, or just a reference to a general idea.
2. If you directly quote works written by someone else, enclose the quotation with quotation marks and provide an appropriate citation (e.g., footnote, endnote, bibliographical reference).
3. Research as well as the complete written paper, must be the work of the person seeking academic credit for the course. (Papers, book reports,projects, and/or other class assignments are not to be purchased from individuals or companies which provide these services.)

Discipline: Faculty members may respond to cases of plagiarism in any of the following ways:

1. Return the paper or other item for rewriting; the grade may be lowered.
2. Give a failing grade on the paper or other item "F" if a letter grade is used or zero if numerical grade is used.
3. Give the student who plagiarized a failing grade in the course. Recommend sanctions, including disciplinary expulsion from the university. (See page 29 of the Student Handbook, 1999-2000 for procedural details.)

B. Cheating

Cheating is an act of dishonesty with the intention of obtaining and/or using information in a fraudulent manner.

1. Observing and/or copying from another student's test paper, reports, computer files, and/or other class assignments.
2. Giving or receiving assistance during an examination period. (This includes providing specific answers to subsequent examinees and/or dispensing or receiving information which would allow the student to have an unfair advantage in the examination over students who did not possess such information.)
3. Using class notes, outlines, and other unauthorized information during an examination period.
4. Using, buying, selling, stealing, transporting, or soliciting, in part or entirety, the contents of an examination or other assignment not authorized by the professor of the class.
5. Using for credit in one class a term paper, book report, project, or class assignment written for credit in another class without the knowledge and permission of the professor of the class.

6. Exchanging places with another person for the purposes of taking an examination or completing other assignments.

Discipline: Faculty members may respond to cases of cheating in any of the following ways:

1. Allow the testing to progress without interruption, informing the offending student about the offense, and award a failing grade on the test "F" if a letter grade is used or zero if a numerical grade is used.
2. Seize the test of the offending student and give a failing grade on the paper.
3. Give the offending student a failing grade in the course.
4. Recommend sanctions, including disciplinary expulsion from the university.

Students with Special Instructional Needs

If you have any special needs related to learning or testing in this course, please let me know as soon as possible so I can address those needs.

Tentative Syllabus – Pharmacology – Spring 2012

DATE	CHAPTER	TOPIC
T 1/17		Course Introduction; History of Pharmacology; Biochemistry Review *(A. Grippo)*
R 1/19	1,2	Review of Biochemistry – cont'd; Cellular Receptors *(AG)*
T 1/24	2,3	Cellular Receptors – cont'd; Absorption, Distribution, etc. *(AG)*
R 1/26	3	Absorption, Distribution, Metabolism, Elimination – cont'd *(AG)*
T 1/31	3; 15,39	Absorption, etc. – cont'd; Antiinflammatories
R 2/2	15,39	Antiinflammatories *(AG)*
T 2/7	9	Introduction to the Autonomic Nervous System *(M Srivatsan)*
R 2/9		***Exam 1—Receptors, Pharmacokinetics, Antiinflammatories***
T 2/14	10	Drugs affecting Parasympathetic Nervous System *(MS)*
R 2/16	11	Drugs affecting Sympathetic Nervous System *(MS)*
T 2/21	27, 28	Introduction to Central Nervous System, Treatment of Alzheimer's and Parkinson's diseases *(MS)*
R 2/23	29,30	Treatment of Psychotic and Affective Disorders *(MS)*
T 2/28	19	Review of Cardiovascular Physiology *(R. Grippo)*
R 3/1		***Exam 2 – Neuroactive Drugs***
T 3/6	20	Cardiovascular Drugs – Anti-hypertensives *(RG)*
R 3/8	22	Cardiovascular Drugs – Anti-arrhythmics *(RG)*
T 3/13	23,24	Cardiovascular Drugs – Heart failure *(RG)*
R 3/15	21	Review of Renal Structure and Function *(RG)*
3/19-3/23		***SPRING BREAK***
T 3/27	21	Drugs Affecting Renal Function - Diuretics *(RG)*
R 3/29		***Exam 3 – Cardiovascular and Renal Drugs***
T 4/3	43	Insulin and Diabetes
R 4/5	53,54	Drugs that Kill Invaders: Antineoplastic Agents *(A. Grippo)*
T 4/10	53,54	Antineoplastics – cont'd *(A. Grippo)*
R 4/12	47-51	Drugs that Kill Invaders: Antimicrobial Agents *(D. Gilmore)*
T 4/17	47-51	Antimicrobials – cont'd *(DG)*
R 4/19	47-51	Antimicrobials – cont'd *(DG)*
T 4/24	47-51	Antimicrobials – cont'd *(DG)*
R 4/26		*Graduate student talks*
R 3/3 12:30 p.m.		***Exam 4 – Diabetes, Antineoplastics, Antimicrobials, Grad student topics***

CHEM 6273 Research in Chemistry Agreement

This form must be completed by the student and faculty research advisor. It must be signed by the student and advisor, and submitted to the Chair of the Department of Chemistry & Physics by 5:00 PM of the third day of the term in which the student has registered for CHEM 6273.

Student Name:	
Student ID:	
Research Advisor:	
Year:	
Term:	
Research Title:	
Research Description:	
CRN: entered by office personnel	

Students registering for CHEM 6273* must complete a minimum of 150 hours of laboratory research. Literature review and library research will not be included as part of this required time commitment. The student will provide a summary report of the completed laboratory research. This report will be a minimum of four pages* (typed, single spaced, 12 point font, one inch margins) in length, and tables, figures, equations, formatting (i.e. section headings/titles) and references will not constitute any portion of the four pages. The report must be approved by the advisor, and submitted to the Chair of the Department of Chemistry & Physics at least three days prior to end of the term in which the student has registered for CHEM 6273. The summary report must be submitted to the Department Chairman before course credit will be awarded.

By signing this document the student agrees to perform the research described above according to terms of this document. Moreover, the student realizes failure to satisfy these terms may result in a failing grade for this section of CHEM 6273.

* A student registering for two related sections of CHEM 6273 during the same semester will be required to complete a minimum of 300 hours of laboratory research, and may submit a single report of minimum length of eight pages.

Student signature	Instructor signature	Chair signature
Date	Date	Date

CHEM 6353 Advanced Analytical Chemistry
Fall 2011

Course Syllabus

Instructor Information

Instructor: Dr. Richard A.F. Warby

Office Location: Lab Science East Room 420 (LSE 420)

Office Phone: 870-972-3412

Fax: 870-972-3089

E-Mail: rwarby@astate.edu

General Course Information

Prerequisite for Advance Analytical: CHEM 3054

Class Meeting Times and Location: 17:00-18:15 in LSE 206

Official Office Hours: Note: 10:00-11:00 MWF. I have an open door policy. Should you need help outside of my official office hours you are ALWAYS welcome to stop by my office.

Text Book : NONE.

Students with Disabilities: Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements can be made to ensure equal access to this course.

Grading and Assignments

Grade	Straight Percentages
A	90+
B	80 – 89.999
C	70 -79.999
D	60 -69.999
F	Below 60

There will be no curving of grades in this class!

Course Objectives/Outcomes

- Effectively communicate scientific information in written and oral forms to various audiences (from laypersons to scientific).
- Have a keen understanding of QAQC in Analytical Chemistry.

Work Product	Grade Contribution (%)
Class Participation	**10**
Journal Article/Mini-Assignment Discussions and Synopses	**15**
Analytical Laboratory Practices (In the laboratory)	**15**
Midterm	**30**
• **Presentation**	— 10
• **Report**	— 10
• **Exam**	— 10
Final Report (QAPP)	**30**
• **Presentation**	— 10
• **Report**	— 10
• **Exam**	— 10
TOTAL	**100**

Class Participation: Presentation of materials in this course will be highly interactive. Attendance and participation are key elements to success. Ideally, everyone will participate in the in-class discussions and your individual contribution to these discussions will count towards your class participation grade.

Journal Article/Mini-Assignment Discussions and Synopses: During the course of the semester students will be required to read selected journal articles. These will then be discussed in class and students may be asked to write a synopsis on the article. Students will be chosen at "random" (I will choose unbeknownst to you) to lead the class discussion. It is highly recommended that students read and understand the assigned articles prior to class.

Analytical Laboratory Practices: Some of the theory that is learned during the course of the semester will put into practice in the laboratory. Students will be presented with various scenarios and be asked to demonstrate and detail how they would solve the practical problems presented. Please note that the extent of these activities will be determined by the number of students enrolled in the class.

Mid-Term Presentation, Report, and Examination: Students will choose one paper from the literature and write a detailed critique of the analytical QAQC procedures presented in the manuscript. The critique will also compare and contrast the different QAQC procedures used in their paper and the other papers in their group, and suggest alternatives. Students will work in groups of three and present their findings as a group. This will take the form of a 35 minute PowerPoint Presentation. Every student is expected to present for a minimum of eight minutes. The midterm examination will be written and comprehensive.

Final Presentation, Report, and Examination: Students will prepare a comprehensive Quality Assurance Project Plan (QAPP) for their M.S./Ph.D. Project. If you do not have one, a dataset and project description will be provided. A very detailed outline of what is expected in the QAPP will be provided closer to the time. **NOTE: Preparation of ALL reports is to be an individual effort. Evidence of collaboration on any written final work product will result in an F in this class, period.** The QAPP will be presented during class as a 15 minute PowerPoint Presentation. Twelve minutes of this time will be allocated towards the presentation and three minutes for questions. These times will be ruthlessly enforced. The final examination will be written and comprehensive.

Grade Requests During the Semester: In order to keep track of your grades during the semester please come and see me and I will give you your then-current grade. However, I ask that you do not abuse this privilege otherwise it may be revoked. Federal Law prohibits discussion of your grade with anyone. Also, grades cannot be given by e-mail or over the phone.

Course Topics to be Covered

Topics to be Covered in Advanced Analytical Chemistry
QAQC Jargon
Quality Control
Quality Assurance
Data Validation
Data Verification
Data Quality Indicators
Data Quality Assessment
The Standard Curve
Values Near Zero
Common Statistical Analyses (Parametric and Non-Parametric Statistics)
Data Presentation (Oral and Written)
Practical Interpretation of Results

Other

1) Please arrive on time for class, it is a disruption to those already seated when people arrive late. Similarly, I will finish class on time to ensure you can get to other classes punctually.
2) When corresponding with me via e-mail, I would greatly appreciate an appropriate salutation and signature. I will delete any e-mails sent to me starting inappropriately including but not limited to: hey; what-up; howzit; etc. Appropriate salutations include but are not limited to: Dear Dr. Warby; Hello Dr. Warby; Dr. Warby; etc.

CRN 14009 Arkansas State University – Spring 2012 Chemistry 6393 Advanced Organic Chemistry

Instructor: Dr. Michael Panigot
Office: 517 Lab Sciences East
Phone: 972-3494
e-mail: mpanigot@astate.edu
Office Hours: MWF 9:00 – 10:50, also by appointment.
Class Meets: LSE 508 5:00 - 6:15 PM TR
Prerequisite: Chemistry 3113 or equivalent
Text: Carey & Sundberg *Advanced Organic Chemistry Part A,* 5th ed, Springer, 2007.

Course Description: Chemistry 6393 is designed to present more detailed topics of organic chemistry at the graduate level than are covered in the two-semester undergraduate sequence.

Course Objectives: The course will be designed to review some topics physical organic chemistry

Course Schedule Outline (Tentative - Subject to Change):

Week #:	**Ch. #:**	**Topic:**
1,2	1	Chemical Bonding & Structure
3,4	2	Stereochemistry, Conformation, & Stereoselectivity
5.6	3	Structural Effects
7,8	4	Nucleophilic Substitution
9,10	5	Polar Addition & Elimination Reactions
11,12	6	Carbanions & Other Nucleophilic carbons/

Chapters 7 and on - I will be glad to cover if there is time and interest.

Quizzes: No quizzes will be given for Chemistry 6393.

Exams: Exams will be scheduled once sufficient material has been covered. As a graduate course I will not do a set number of exams.

Paper: I want you to write a critique of a current journal article (within the last 5 years) dealing with organic chemistry from any of the following journals:

Tetrahedron
Tetrahedron Letters
Journal of Organic Chemistry
Journal of the American Chemical Society

The first two journals can be accessed using Science Direct and the last two can be searched using SciFinder Scholar. ABSOLUTE deadlines are:

Journal article selected – February 3
Outline of review (one page, typed, single spaced) – Feb. 24
Preliminary draft of paper – March 16
Final draft of paper – April 30 (last day of class)

Final Exam: The paper will replace the final exam for this course.

Advanced Inorganic Chemistry
CHEM 6403

Spring 2012

Dr. Draganjac
Draganjac Home Page
mdraganj@astate.edu

LSW549 Office
LSW542 Lab
LSW534 Lab

972-3272
CHEM6403
Course: 5-6:15 MW LSE206
Office hours: 9-10:50 TR (Other times by appointment)
Pre-requisite: CHEM4204 Inorganic Chemistry
Text: Inorganic Chemistry, Huheey, Keiter and Keiter, 4th Edition Harper Collins, ISBN 0-06-042995-X (not required)
Tests: 4 exams
Course will cover Coordination Chemistry: Theory, Structure and Reaction Kinetics and Mechanisms, Symmetry and Point Groups, and topics selected from the following subjects: Catalysis, Descriptive Chemistry of the Transition Elements, Lanthanides and Actinides, Organometallics, Inorganic Chains, Rings, Cages and Clusters and Inorganic Chemistry in Biological Systems.

MS Chemistry Learning Outcomes/Objectives	
Objective	**Description**
Content Knowledge	Demonstrate in-depth knowledge of the four-core disciplines of chemistry including: analytical, inorganic, organic, and physical.
Critical Thinking	Demonstrate effective critical thinking skills.
Problem Solving	Integrate and apply knowledge to solve complex scientific problems.

Useful Links:
Course related worksheets
10 Dq Tables
Tanabe-Sugano Diagrams
Tanabe-Sugano Diagrams
Character Tables
Point Group Flow Chart

CHEM 6433 Advanced Physical Chemistry

Dr. Scott Reeve **LSW 538 Office**

972-2521 **LSW 543 Lab**

E-mail: sreeve@astate.edu

Course description: A systematic, rigorous investigation of the principles of chemistry via thermodynamics, quantum theory, and chemical dynamics. Molecular and macroscopic models are developed in parallel. Prereq: CHEM 3134.

Lecture **5:00-6:15 PM MW** **LSE 206**

Office hours: MW 4-4:45 LSW 537

Required Text(s): Harris and Bertolucci, Symmetry and Spectroscopy: An introduction to vibrational and electronic spectroscopy and Steinfeld, Molecules and Radiation: An introduction to Modern Molecular Spectroscopy, 2nd Edition.

Supplemental Texts:

Gordon M. Barrow, Introduction to Molecular Spectroscopy, McGraw-Hill, 1962;
William A. Guillory, Introduction to Molecular Structure and Spectroscopy, Allyn and Bacon, 1977; Walter S. Struve, Fundamentals of Molecular Spectroscopy, Wiley, 1989;
Gerhard Herzberg, Atomic Spectra and Atomic Structure, Dover, 1944;
Gerhard Herzberg, Molecular Spectra and Molecular Structure I. Spectra of Diatomic Molecules, Van Nostrand Reinhold, 1950;
Gerhard Herzberg, Molecular Spectra and Molecular Structure II. Infrared and Raman Spectra of polyatomic Molecules, Van Nostrand Reinhold, 1945;
Gerhard Herzberg, Molecular Spectra and Molecular Structure III. Electronic Structure and Electronic Spectra of Polyatomic Molecules, Van Nostrand Reinhold, 1966;
C. H. Townes and A. L. Schawlow, Microwave Spectroscopy, Dover 1975;
E. Bright Wilson, J. C. Cross, and P. C. Cross, Molecular Vibrations, The Theory of Infrared and Raman Vibrational Spectra, Dover, 1955;
J. Michael Hollas, High Resolution Spectroscopy, Butterworths, 1982;
J. M. Hollas, Modern Spectroscopy, Wiley, 1996.;
Walter Gordy and Robert L. Cook, Microwave Molecular Spectra, Wiley, 1984.
McQuarrie and Simon, Physical Chemistry: A Molecular Approach, University Science Books, 1997.

Course Objectives/Learning Outcomes:

Content Knowledge: Demonstrate in-depth knowledge of physical chemistry.

Problem Solving: Demonstrate integration and application of knowledge to solve complex scientific problems within a physical chemistry context.

Course Outline

Review of Quantum Mechanics
Vibrational Spectroscopy of Diatomic Molecules
Group Theory
Vibrational Spectroscopy of Polyatomic Molecules
Molecular Orbital Theory

Electronic Spectroscopy

Grade will be based on the following items:

1) Midterm Exams (3)	60%
2) Final Exam	40%

Problem sets/homework:

Problem sets will be assigned on an approximately weekly basis. Problem sets will be due approximately one week after it is assigned. I strongly recommend you keeping up with the homework assignments as they will form the basis for the questions on the exam.

Policy on make-up work:

Policy on absences/make-up exams: There will be no make-up exams unless the absence is the result of an official ASU activity. Missed exams will be handled on an individual basis. However, if you cannot make a scheduled exam time, you must make alternative arrangements with the instructor at least one week prior to the scheduled exam. In other words, you will not be allowed to make-up an exam after the scheduled exam date.

Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodation. Appropriate arrangements can be made to ensure equal access to this course.

Appendix II
Chemistry Faculty Curriculum Vitae

CURRICULUM VITAE

Hashim Ali (Al-Hosney), PhD

Assistant Professor of Chemistry
Arkansas State University-Jonesboro
Email: hali@astate.edu, Phone 870-972-3215

Education:

Ph.D. Atmospheric Chemistry, **July 2005**, University of Iowa
Thesis title: "*Laboratory studies of Atmospheric Particles: "Heterogeneous Reactions and Phase Transitions*"

B.Sc. Physical Chemistry (Honors), **August 2000**, United Arab Emirates University,
Thesis: "*Investigation of the level of toxicity of heavy metal ions in treated waste waters of Abu Dhabi, U.A.E. by Voltammetric and Polarographic techniques*"

Research and academic experience:

Aug 2009-Current: Assistant Professor,
Department of Chemistry and Physics, Arkansas State University-Jonesboro
Research: *Field and Laboratory studies of atmospheric aerosols using Small Platform Samplers.*

Sept 2006- July 2009 Postdoctoral Research Associate
Pacific Northwest National Laboratory (PNNL), Richland, Washington, USA
Probing atmospheric aerosol/ dust chemistry, in laboratory and field studies

Aug 2005-Oct 2006 Postdoctoral Research Assistant
Civil and Environmental Engineering, University of Iowa, Iowa City, Iowa, USA
Sustainability of Long Time Abiotic Attenuation of Halogenated Organic Solvents

2002- July 2005 Graduate Research Assistant
Chemistry Department, University of Iowa, Iowa City, Iowa, USA
Investigating the role of heterogeneous aerosols in global climate change

2000-2002 Teaching Assistant in Chemistry
Chemistry Department, University of Iowa, Iowa city, Iowa, USA
Led two undergraduate courses in the chemistry department

1998-2000 Undergraduate Honors Research
Chemistry Department, United Arab Emirates University, Al-Ain, United Arab Emirates
Differential Pulse Polarographic (DPP) and Anodic/ Cathodic Stripping Voltammetric (A/C SV) study of the level of toxicity of heavy metal ions in treated waste waters of Abu Dhabi, U.A.E.

Significant teaching or service efforts

February 2012 Arkansas State University faculty representative, the EnvironMentors Program.

Nov 9-12, 2011 Symposium Organizer and Chair, "The Atmosphere and Climate Symposium", Southwest Regional Meeting of the American Chemical Society (SWRM), Austin TX

September 2011 Campus coordinator, Arkansas Louise Stokes Alliance for Minority Participation (ARK_LSAMP), Arkansas State University Jonesboro campus

Aug 2011-2012 Faculty Advisor, American Chemical Society (ACS) student affiliate, Arkansas State University.

April 08-09, 2010 Chair, Chemistry Session, Arkansas Academy of Science (AAS) meeting, University of Arkansas at Monticello, Monticello AR.

Dec 04 2010 Invited to participate in "*Student skills and academic excellence: Preparing students for employment/transfer*." Focusing on the integration of non-technical skills into the chemistry curriculum. New Orleans, LA, as part of the American Chemical Society's (ACS) 66th Southwest and 62nd Southeast ACS Regional Meetings.

Oct 15-16, 2010. Repeat Judge for the Arkansas INBRE undergraduate poster session, University of Arkansas at Fayetteville, Fayetteville AR

Oct 23-24, 2009 Judge for the Arkansas INBRE undergraduate poster session, University of Arkansas at Fayetteville, Fayetteville AR

Publications:

1. Tannika Arora, **Hashim Ali**, William Burns, Eiko Koizumi, Hideya Koizumi, "*Theoretical and ATR-FTIR study of free 12 crown-4 in aqueos solution*", Chemical Physics Letters, 502, 4, **2011.** (Times Cited=0)

2. Yu, X.-Y .,Cowin, J.P., Iedema M.J., and **Ali, H**; "*Fast time resolved aerosol collector : Proof of Concept*"**,** Atmos. Meas. Tech., 3,1377-1384, **2010** (Times Cited=0)

3. Shuttlefield, J., **Al-Hosney, H. A**. Zachariah A. and Grassian V.H., "*Attenuated Total Reflection Fourier Transform Infrared Spectroscopy to Investigate Water Uptake and Phase Transitions in Atmospherically Relevant Particles*", Appl. Spectros., **2007**, 61, 3, pp-283-292. (Time cited = 16) (Cover article)

4. **Al-Hosney, H. A**. Carlos-Cuellar, S, Baltrusaitis, J. and Grassian, V. H. "*Heterogeneous Uptake and Reactivity of formic acid on calcium carbonate particles: A Knudsen Cell Reactor, FTIR and SEM*., " Phys. Chem. Chem. Phys. **2005**, 7, 3587-3595. (Times cited =21) (Cover Article.)

5. **Al-Hosney, H. A**. and Grassian, V. H. "*Water, Sulfur Dioxide and Nitric Acid Adsorption on calcium carbonate: A Transmission and ATR-FT-IR study*" Phys. Chem. Chem. Phys. **2005**, 7, 1266-1274. (Times cited = 66)

6. Al-Abadleh, H. A., **Al-Hosney, H. A**. and Grassian, V. H. "*Oxide and Carbonate Surfaces as Environmental Interfaces: The Importance of Water in Surface Composition and Surface Reactivity*" J. Molecular Catalysis A, **2005**, 228(1-2), 47-54 (Times cited =29)

7. **Al-Hosney, H. A**.; Grassian, Vicki H. "*Carbonic acid: An important intermediate in the surface chemistry of calcium carbonate*" J .Am. Chem. Soc., **2004**, 126(26), 8068-8069. (Times cited =57)

8. Usher, C. R., **Al-Hosney, H. A**., S. Carlos-Cuellar, and Grassian, V. H., *A laboratory study of the heterogeneous uptake and oxidation of sulfur dioxide on mineral dust particles*, J. Geophys. Res., **2002**, 107(D23), 4713, (doi: 10.1029/2002JD002051). (Times cited=80)

Presentation and posters:

July 10 2012 **Presented:** "*Why a career in STEM is the best investment for you*", presented to freshmen Underrepresented Minority students at University of Arkansas at Pine Bluff (an HBCU).

Nov 09 2011 **Presented:** "*Small Platform sampling of stratospheric water vapor*, "67th Southwest Regional ACS meeting, Nov 09th 2011, Austin TX (Symposium chair and organizer)

Oct 17 2011 Poster**: "***ATR-FTIR study of the deliquescence relative humidity of mixed inorganic aerosols of atmospheric relevance*", National Council on Undergraduate Research (NCUR), October 17th 2011, Arlington VA.

Oct 08 2011 **Presentation:** Midsouth Inorganic Chemists Association (MICA) "*Q&A with an atmospheric chemist*", Arkansas Tech University, Russellville AR, October 08, 2011

Apr 22 2011 **Presented** "*Water vapor measurements from weather balloons*" at the 19th annual ASGC meeting held at the Winthrop Rockefeller institute at Petit Jean near Morrilton Arkansas.

Feb 19 2011 **Presented** *" Stratospheric water measurements from weather balloons*" at the NASA EPSCoR annual meeting at the Winthrop Rockefeller institute at Petit Jean near Morrilton Arkansas. February 19, 2011

April 8, 2011 92nd Annual Arkansas Academy of Science Meeting held at the University of Arkansas-Monticello. **Presented** my research, Adam presented a poster.

Mar 12, 2011 Poster, "*Water Affinity of inorganic atmospheric aerosols*", Goins, A and **Ali, H**., Spring 17th Mid-South Inorganic Chemist Association (MICA) meeting held at Lyon College.

Nov, 30 2010 Poster: *Measurements of Stratospheric water vapor by weather balloons* , Goins, A and **Ali, H**., SE/SW ACS New Orleans . Poster selected for SCI/MIX in the division of Physical Chemistry

Apr 02 2010 Poster: "*Aerosols in the Boundary layer*" National Conference for Undergraduate students (NCUR), Bryant Fong Summer RISE student presented a conference April 01-02, 2011

Oct 15 2010 Poster: Arkansas "*Conditions in the upper troposphere related to climate change*" Baird, S., Kennon, T and **Ali, H**., INBRE conference.

Aug 23 2010 Poster : *Geometrical Structures of free 12-Crown-4 in Aqueous Solution and the Selectivity of 12-Crown-4 on Alkali Metal Ions in Aqueous solutions : A theoretical study,* ACS Boston presented a poster Arora, T, Burn, W., **Ali, H**, Koizumi, K., Presented at the Chemistry Division, 234th ACS National Meeting, Boston, Massachusetts.

Mar 13 2010 Poster "*Conditions in the upper troposphere related to climate change*" Goins, A, Stone, M, Kennon, T., **Ali, H**., Spring Mid-South Inorganic Chemist Association (MICA) conference at University of Arkansas at Monticello

Oct 16 2009 Poster: Fall Mid-South Inorganic Chemist Association (MICA) Meeting at University of Central Arkansas at Conway

Dec 12 2007 "*Fast-Time Resolved Aerosol Collector**" , Yu, X., **Hashim Al-Hosney**, Iedema, M., Cowin, J., presented at the 2007 American Geophysical Union (AGU) Fall meeting in San Francisco, California.

Mar 25 2007 "*Contaminant Interactions with Green Rusts: Abiotic and Biotic Pathways*", **Hashim Al-Hosney**, Michelle M. Scherer, et al; presented at the Division of Environmental Chemistry, 233rd American Chemical Society (ACS) National Meeting, Chicago, Illinois.

Mar 29 2006 "*Reactivity of Ferrous Iron associated with Nanoparticle Iron Oxides*": Cwiertny D.M, Handler R.M., **Hashim Al-Hosney**, Grassian, V.H and Scherer, M.M., presented at the Advances in Surface-Mediated Transformation in Environmental Systems, Division of Environmental Chemistry at the 231st American Chemical Society (ACS) National Meeting, Atlanta, Georgia

Nov 29 2005 "*Abiotic Attenuation of Chlorinated Ethenes*", **Hashim Al-Hosney**, Michelle Scherer et al, presented at the Partners in Environmental Technology, Technical Symposium & Workshop for the Strategic and Environmental Research and Development Program (SERDP) of the Department of Defense (DOD), in Washington, D.C.

May 4 2005 Invited speaker at Pacific Northwest National Laboratory (P.N.N.L) in Richland WA, "*Laboratory Studies of Atmospheric Particles: Heterogeneous Reactions and Phase Transitions*", **Hashim Al-Hosney** and Vicki Grassian, Host Dr. Jim Cowin, Environmental Molecular Science Laboratory (E.M.S.L), at PNNL in Richland, Washington.

Mar 28 2004 "*FTIR Study of the Reaction of Gaseous Inorganic and Organic Acids on Calcium Carbonate*", **Hashim Al-Hosney** and Vicki Grassian Presented at the Chemistry Division, 227th ACS National Meeting, Anaheim, California.

Nov 11 2003 "*FTIR Study of the Reaction of Sulfur Dioxide and Nitric Acid on High Surface Area Calcite Samples*", **Hashim Al-Hosney** and Vicki Grassian, Presented at the Symposium on Nanoscience and Nanotechnology at the Iowa Advanced Technological Laboratories (IATL), University of Iowa. Iowa City Iowa

Oct 11 2003 "*Other Factors Contributing to the Deterioration of Calcareous Stone*", **Hashim Al-Hosney** and Vicki Grassian, Presented at the 26th Annual Midwest Environmental Chemistry Workshop, College of Engineering, University of Iowa. Iowa City Iowa

(*Patent application pending)

Undergraduate Mentees Academic awards:

2012	Undergraduate mentee, **Ronnie Ruyonga** won 2nd place in the undergraduate Chemistry and Biochemistry session at the ARK_INBRE research conference in Fayetteville AR.
2011	Undergraduate mentee, **Bryant Fong**, selected to present research at the Conference of Undergraduate Research (CUR) meeting in Arlington VA
2010	Undergraduate mentee, **Bryant Fong**, selected to present research at the National Conference on Undergraduate Research (NCUR) meeting in Ithaca NY.
2010	Undergraduate mentee, **Adam Goins** was chosen as a recipient of the ASU Undergraduate Research Travel Funds
2005	Supervised research that resulted in an Alumni Award for best poster in undergraduate research as presented by **Ann Zachariah** (undergraduate advisee)
2004	Graduate Student Travel Award and Department Travel Award (to attend ACS meetings)
2000	National Award for Honors Students at the UAE University from His Highness Sheikh Nahyan Bin Zayed (Son of the President of the United Arab Emirates)
1998	Recognition of Academic Excellence from the Faculty of Science and the Program for Improvement and Development of Honor Students, UAE University.
1996	Awarded the Sheikh Khalifa Bin Zayed Educational Fellowship for excellent students to study at the UAE University in UAE. (Awarded for 4 years)

Professional affiliations:

2011-curent	Arkansas Academy of Science (AAS)
2009-current	Certified Environmental Practitioner in Training (CEPIT), issued by the Canadian Environmental Certification Approvals Board (CECAB)
2007-current	The American Meteorological Society (AMS)
2004-current	American Chemical Society (ACS)
2003-2005	The Chancellors' List, The National Deans List
2001-current	Alpha Theta chapter of the Alpha Chi Sigma (ΆΧΣ) Professional Chemistry Fraternity

Grant /Article/Book Reviewer

1. National Science Foundation (NSF), Graduate Research Fellowship (GRFP) Panelist, 2013
2. National Science Foundation (NSF) grant reviewer.
3. Journal of Atmospheric Chemistry and Physics (2010- Current)
4. Journal of Colloid and Interface Science (2010-Current)
5. Proceedings of the National Conference on Undergraduate Research 2011 Reviewer, (2011-Current)
6. Book reviewer for "*Elements of Physical Chemistry*" sixth edition by Atkins and de Paula, WH Freeman and Company, NY.

Successful Funding/Grants

- NSF ELF (Experiential Learning Fellowship) project, (**$567, 185**) PI: John Pratte, CO-PI, **Ali, H**., Warby, R, Marsico, T., Tanja, M., 2011- 2015
- Arkansas State Faculty Research Award (ASU_FRA), **($3988.00**) , PI: Ali, H; 2012-2013

- NSF EPSCoR ARK_LSAMP (**$4 M**, for 5 years), PI Mary Benjamin, **Campus Coordinator**: **Ali, H**, 2008-2013.

- SENCER NSF 2010-2012 (**$ 3000.00**) Sub-Awards; PI Warby; Co PI **Ali, H**.
- Arkansas Space Grant consortium (ASGC) **($ 431.00**), PI, **Ali, H**., "*Atmospheric Aerosol/Radiation*", May 2010-May 2011
- Arkansas Space Grant consortium (ASGC), **($ 10,020.00**), PI Tillman, CO-PI, **Ali, H**, May 2010-May 2011
- Arkansas Space Grant consortium (ASGC) (**$ 3012.20**), PI, **Ali, H**., "*Balloon-Sat Based Micro Thrusters Flight tests*", April 2009-April 2010

CURRICULUM VITAE

Kathryn D. Burns
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Jonesboro, AR 72404
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(870) 972-3061 (work)
E-mail: kburns@astate.edu

EDUCATION

M.S., Chemistry, 1996, University of Minnesota, Minneapolis, MN
Emphasis: Analytical Chemistry, Bioanalytical Chemistry of Biological Systems, Electrochemistry
Thesis Advisor: Marian Stankovich (deceased)
Thesis: Characterization of the Spectral and Thermodynamic Properties of CDP-6-deoxy-$\Delta^{3,4}$-glucoseen reductase (E_3) and CDP-6-deoxy-L-*threo*-D-*glycero*-4-hexulose-3-dehydrase (E_1)

B.A., Physiology, 1990, University of Minnesota, Minneapolis, MN

EMPLOYMENT EXPERIENCE

Instructor, 2008-present
Arkansas State University, Jonesboro, AR, Department of Chemistry
Courses taught: Traditional and Online Physical Science Laboratory, Traditional and Online Physical Science

Instructor, 2000-2003
Arkansas State University, Jonesboro, AR, Department of Chemistry
Courses taught: Physical Science Laboratory, Physical Science, Introduction to Chemistry

Self-employed, 1999-2000
Church Street Pastries, Jonesboro, AR

Instructor, 1998-1999
Arkansas State University, Jonesboro, AR, Department of Chemistry
Courses taught: Physical Science Laboratory, Physical Science, Introduction to Chemistry

Assistant Textbook Coordinator, 1998
Arkansas State University Bookstore, Jonesboro, AR

Instructor, 1997
Arkansas State University, Jonesboro, AR, Department of Chemistry
Courses taught: Quantitative Analysis Laboratory, General Chemistry Laboratory, Introduction to Chemistry, Physical Science

Dillard's Sales Associate, 1996
Jonesboro, AR

Research Assistant, 1991-1996
University of Minnesota, Minneapolis, MN, Department of Chemistry

Teaching Assistant, 1990-1991, 1994-1995
University of Minnesota, Minneapolis, MN, Department of Chemistry
Courses taught: Quantitative Analysis Laboratory, General Chemistry Laboratory, Instrumentation Laboratory for Chemical Engineers, Instrumentation Laboratory for Chemistry Majors

PUBLICATIONS

"Studies of the Redox Properties of CDP-6-deoxy-L-threo-D-Glycero-4hexulose-3-dehydrase (E1) and CDP-6-deoxy-L-threo-D-glycero-4-hexulose-3-dehycrase reductase (E3): Two Important Enzymes Involved in the Biosynthesis of Ascarylose" K. D. Burns, P. A. Pieper, H. Liu, M. T. Stankovich, *Biochemistry*, **35**, 7879, (1996).

SKILLS AND QUALIFICATIONS

- Eleven years experience with standard chemistry laboratory equipment and practice
  - Quantitative glassware and techniques, such as titrating and pipetting
  - Experience with pH meters, spectrophotometers, balances, potentiostats, atomic absorption
  - Knowledgeable in lab safety and accurate written documentation
- Spreadsheet/Word processing
- Eleven years of (college) teaching experience
  - Taught/Managed up to fourteen Physical Science Laboratory Sections per semester (approximately 400 students)
  - Directed undergraduate and graduate teaching assistants for Physical Science Laboratories
  - Developed Labs for Quantitative Analysis Laboratory and Physical Science Laboratories at Arkansas State University
  - Responsible for preparing and standardizing solutions

Vitae
William A. Burns, Ph.D.

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3008 Park Hill Blvd
Jonesboro, AR 72404
(870) 935-2893
E-mail address: wburns@astate.edu

Education

Ph.D., physical chemistry, July 1996, University of Minnesota, Minneapolis, MN
Thesis Advisor: Kenneth R. Leopold,
Thesis title: A Spectroscopic and Crystallographic Study of Nitrile Containing Complexes

B.S., chemistry (cum laude), December 1987, Drake University, Des Moines, IA

Experience

Chair Department of Chemistry and Physics Arkansas State University, Jonesboro, AR, Oct December 2011 – present

Interim Chair Department of Chemistry and Physics Arkansas State University, Jonesboro, AR, Oct 2010 – December 2011

Interim Associate Dean College of Sciences and Mathematics, Arkansas State University, Jonesboro, AR, Oct 2009 – Oct 2010

Associate Professor Department of Chemistry and Physics, Arkansas State University, Jonesboro, AR, Aug 2002 - present

Assistant Professor Department of Chemistry and Physics, Arkansas State University, Jonesboro, AR, Aug. 1997 – May 2002

Instructor Department of Chemistry and Physics, Arkansas State University, Jonesboro, AR, Sept. 1995-Aug. 1997

Research Assistant Department of Chemistry, University of Minnesota, Minneapolis, MN, 1990-1995

Teaching Assistant Department of Chemistry, University of Minnesota, Minneapolis, MN, 1989-1991

Professional Affiliations and Activities

American Chemical Society, 1988 - present
Phi Lambda Upsilon, national honorary chemical society, 1988 - present
Sigma Xi, scientific research society, April 1996 - present
Reviewer for Journal of Chemical Education, 1998 - present

Publications

1. "Picosecond rotationally resolved stimulated emission pumping spectroscopy of nitric oxide" C. Tanjaroon, S. Reeve, W. D. Murry, K. Lyon, B. Yount, D. Britton, Dan; W. Burns, S. Allen, B. J. Johnson, *Chemical Physics*, 393(1), 80-85 (2012).
2. "An optical nose approach to explosive detection: one strategy optically based sensing" T. Osborn, W. A. Burns, J. Green, S. W. Reeve, *Spectroscopy*, 26(1), 34-45 (2011).
3. "Theoretical and ATR-FTIR study of free 12-crown-4 in aqueous solution" T. Arora, H. Ali, W. A. Burns, E. Koizumi, H. Koizumi *Chemical Physics Letters*, 502(4-6), 253-258, (2011).
4. "Optical detection of special nuclear materials: an alternative approach for standoff and remote sensing" J. B. Johnson, S. W. Reeve, W. A. Burns, S. D. Allen *Proceedings of SPIE*, , 7665(Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing XI), 76651L/1-76651L/7, (2010).
5. "Measurement of ammonia skin gas using a mid-infrared Pb-salt tunable diode laser" T. Clasp, S. Kaimal, S. W. Reeve, W. A. Burns *Proceedings of SPIE*, 665(Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing XI), 766518/1-766518/7, (2010).
6. "Optical Detection of Explosives: Spectral Signatures for the Explosive Bouquet" T. Osborn, S. Kaimal, J, Causey, W. Burns, S. W. Reeve, Proceedings of SPIE, 7304 (Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing X), 730419/1 – 730419/8, (2009).
7. "Spectral Signatures for Volatile Impurities of TNT and RDX Based Explosives" T. Osborn, S. Kaimal, W. Burns, A. R. Ford, S. W. Reeve, Proceedings of SPIE, 6945 (Optics and Photonics in Global Homeland Security IV), 69451B/1-69541B/11, (2008).
8. "Spectral Signatures for RDX Based Explosive in the 3 Micron Region" T. Osborn, S. Kaimal, S. W. Reeve, W. Burns, Proceedings of SPIE, 6945 (Optics and Photonics in Global Homeland Security IV), 69451S/1-69541S/11, (2008).
9. "The Observation and Analysis of Rotation Vibration Spectra of N_2O: A Physical Chemistry Laboratory Experiment" M.S. Bryant, S. W. Reeve, W. A. Burns, *J. Chem. Educ*. **85**, 121, (2008).
10. "Using a Spreadsheet to Fit Experimental pH Titration Data to a Theoretical Expression: Estimation of Analyte Concentration and K_a" J. Burnett, W. A. Burns, *J. Chem. Educ*. **83**, 1190, (2006).
11. "Infrared Laser Spectroscopy of Jet Cooled Cobalt Tricarbonyl Nitrosyl" K. S. Trauth, W. A. Burns, G. Berry, S. W. Reeve, *J. Chem. Phys*., **120**, 4297, (2004).
12. "Rotational Analysis of FTIR Spectra from Cigarette Smoke: An Application of Chem Spec II in the undergraduate Research Laboratory" A. R. Ford, W. A. Burns, S. W. Reeve, *J. Chem. Ed*., **81**, 865, (2004).
13. "Partially Formed Bonds in $HCN\text{-}SO_3$ and $CH_3CN\text{-}SO_3$: A Comparison Between Donor-Acceptor Complexes of SO_3 and BF_3" W. A. Burns, J. A. Phillips, M. Canagaratna, H. Goodfriend, K. R. Leopold, *J. Phys. Chem. A*, **103**, 7445 (1999).
14. *General Chemistry I Laboratory Manual*, revision 3, W. Burns and L. Jones, McGraw-Hill, Dubuque, IA, 1999.
15. "Quadrupole Coupling Constants for $^{33}SO_3$: Microwave Measurements for Ar-$^{33}SO_3$ and Ab Initio Results for the $^{33}SO_3$ Monomer" D. L. Fiacco, B. Kirchner, W. A. Burns, K. R. Leopold, *J. Mol Spec.*, **191**, 389, (1998).
16. "Accurate Spectroscopic Constants for the Ground Vibrational State of Methyl Isocyanide-d_3, CD_3NC" W. A. Burns, K. R. Leopold, A. D. de Winter, M. D. Marshall, *J. Mol. Spec*., **181**, 224, (1997).
17. "Microwave and Millimeter-Wave Spectra of the Mixed Deuterated-Protonated Water-Dimer Isotopmers" G. T. Fraser, F. J. Lovas, R. D. Suenram, E. N. Karyakin, A. Grushow, W. A. Burns, K. R. Leopold, *J. Mol. Spec*., **181**, 229, (1997).

18. "Dipole Moment of the Lowest Pi Bending State of $(HCN)_2$" A. Grushow, W. A. Burns, K. R. Leopold, *J. Mol. Spec*., **170**, 335, (1995).
19. "Determination of the Three-fold Internal Rotation Barrier in Ar-NH_3" A. Grushow, W. A. Burns, S. W. Reeve, M. A. Dvorak, K. R. Leopold, *J. Chem. Phys*., **100**, 2413, (1994).
20. "Unusually Large Gas-Solid Structure Differences: A Crystallographic Study of HCN-BF_3" W. A. Burns, K. R. Leopold, *J. Am. Chem. Soc*., **115**, 11622, (1993).
21. "Microwave Spectra and Structure of HCN-BF_3: An Almost Weakly Bound Complex" S. W. Reeve, W. A. Burns, F. J. Lovas, R. D. Suenram, K. R. Leopold, *J. Phys. Chem*., **97**, 10630, (1993).
22. "Far Infrared Spectroscopy of the $(0,1^1,0)$ State of Ar-$D^{35}Cl$" S. W. Reeve, M. A. Dvorak, A. Grushow, W. A. Burns, K. R. Leopold, *J. Mol. Spec*., **153**, 252, (1992).
23. "Observation of Three Intermolecular Vibrational States of Ar-HF" M. A. Dvorak, S. W. Reeve, W. A. Burns, A. Grushow, K. R. Leopold, *Chem. Phys. Lett*., **185**, 399, (1991).

Presentations

1. "Pre- and post-assessment of general chemistry students" M. Draganjac, W. Burns, J. T. Kennon, M. Panigot, A. Ontko, H. Koizumi, R. Warby, R, S. Cron, B. Rougeau, 240th American Chemical Society National Meeting, Aug 22, 2010, Boston MA
2. "Interaction of 12c4 with alkali metal cation in aqueous solution: Theoretical investigation using polarized continuum model" T. Arora, H. Ali, W. Burns, H. Koizumi, 240th American Chemical Society National Meeting, August 22, 2010, Boston, MA.
3. "Development of Synthetic Spectra to Aid in the Analysis of Observed High Resolution Infrared Spectra" J. Green, S W. Reeve, W. A. Burns 64th Southwest Regional Meeting of the American Chemical Society, October 1-4, 2008, Little Rock, AR.
4. "Analysis of Rotational Structure in the 710 Band of Isobutylene" T. Clasp, S. Kaimal, W. Burns, S. Reeve Joint 66th Southwest and 62nd Southeast Regional Meeting of the American Chemical Society, December 1-4, 2010, New Orleans, LA.
5. "Pre- and Post-Assessment of General Chemistry Students" T. Kennon, W. A. Burns, M. Draganjac, K. Redeker, C. Dowling, S. Cron, B. Rougeau, M. Panigot Poster 96 of the Division of Chemical Education 235th American Chemical Society National Meeting, April 6-10, 2008, New Orleans, LA
6. "Spectral Signatures of Explosives in the 3 Micron Region" S. Kaimal, T. Osborn, S. Reeve, W. Burns SPIE Defense-Security Conference, 6945-42, March 17-20, 2008, Orlando, FL
7. "Observation and Analysis of CO_2 Rovibrational Spectra in the Physical Chemistry Laboratory" William A Burns, Scott W Reeve, Lynn A Heard, Anh Nguyen; Talk 325 of the 61st Southwest and the 57th Southeast Joint Regional Meetings of the American Chemical Society, November 3, 2005, Memphis, TN.
8. "The Observation and Analysis of Rotation Vibration Spectra of N_2O: A Physical Chemistry Laboratory Experiment" Mark S. Bryant, Scott W Reeve, William A Burns; Talk 326 of the 61st Southwest and the 57th Southeast Joint Regional Meetings of the American Chemical Society, November 3, 2005, Memphis, TN.
9. "FT-IR Rotation Vibration Spectra of Carbon Dioxide" Anh Nguyen, S.W. Reeve, W. A. Burns; Poster 616 of the Division of Chemical Education 229th American Chemical Society National Meeting, March 13-17, 2005, San Diego, CA.
10. "Near Real-time Monitoring of Gas Phase Atmospheric Species" Anh Nguyen, S.W. Reeve, W. A. Burns; Poster 638 of the Division of Chemical Education 229th American Chemical Society National Meeting, March 13-17, 2005, San Diego, CA.
11. "Infrared Diode Laser Spectroscopy of Pyridine in a Jet and a 200 m Herriott Cell" K. S. Trauth, G. M. Berry, W. A. Burns, S. W. Reeve, 38th Midwest Regional Meeting of the American Chemical Society, Columbia, MO, November 6, 2003,.
12. "Infrared Diode Spectroscopy at Arkansas State University, K. S. Trauth, G. M. Berry, W. A. Burns, S. W. Reeve, 2003 BRIN Research Symposium, September 19, 2003, Fayetteville, AR, poster.
13. "Rotational Analysis of Several Vibrational Bands of Cobalt Tricarbonyl Nitrosyl" K. S. Trauth, W.

A. Burns, S. W. Reeve, 87th Annual Meeting of the Arkansas Academy of Science, April 4, 2003, Fayetteville, AR.

14. "Infrared Diode Laser Spectroscopy of Jet Cooled Organometallics, K. S. Trauth, W. A. Burns, S. W. Reeve, 225th National Meeting of the American Chemical Society, March 26, 2003, New Orleans, LA, poster.
15. "Fitting Experimental pH Titration Data to a Theoretical Expression: Estimation of Analyte Concentration and Ka" John Burnett, William Burns, 225th National Meeting of the American Chemical Society, March 23, 2003, New Orleans, LA, poster.
16. "Infrared and Computational Investigations of the CH_3CN-BF_3 Donor-Acceptor Complex" Trent Franks, William Burns, 2002 Undergraduate Research Conference, April 19-20, 2002, Arkadelphia, AR.
17. "Computational Investigations of OC-X (X = BH_3, BF_3, SO_3)" Keith Clem, William Burns, 2002 Undergraduate Research Conference, April 19-20, 2002, Arkadelphia, AR.
18. "Some Unexpected Properties of the Donor-Acceptor Complex CH_3CN-BF_3" Invited talk Lyon College Department of Chemistry, November 28, 2001.
19. "Some Unexpected Properties of the Acetonitrile-Boron Trifluoride Complex" Invited talk University of Memphis Department of Chemistry, February 22, 2002.
20. "Computational Investigation of Nitrogen-Boron Donor-Acceptor Complexes" Leon Thornton, William Burns, 220th National Meeting of the American Chemical Society, August 21, 2000, Washington, DC, poster.
21. "Computational Chemistry: Using Gaussian 98W" Leon Thornton, William Burns, 84th Annual Meeting of the Arkansas Academy of Science, April 7, 2000, Hot Springs, AR, poster.
22. "A Rotational-Vibrational Analysis of Several Components of Tobacco Smoke: An Undergraduate Physical Chemistry Experiment" 1999 Sigma Xi Forum, November 4-5, 1999, Minneapolis, MN, poster.
23. "Analyzing Cigarette Smoke Using Infrared Spectroscopy" Richard Lester, William Burns, 218th National Meeting of the American Chemical Society, August 24, 1999, New Orleans, LA, poster.
24. "Calculation of Vibrational Frequencies Using Mathcad" 215th American Chemical Society National Meeting, April 1, 1998, Dallas, TX.
25. "Experimental Observation of Some Unexpected Physical Properties in Nitrogen-Boron and Nitrogen-Sulfur Containing Complexes" Arkansas State University Sigma Xi Chapter, October 15, 1997.
26. "Structure Correlation: General Chemistry Revisited" Arkansas State University American Chemical Society Chemistry Club Seminar, March 27, 1995.
27. "The Microwave Structure of HCN-SO_3 and CH_3CN-SO_3" 50th Annual Ohio State University Symposium on Molecular Spectroscopy, J. Phillips, M. Canagaratna, H. Goodfriend, Wm. Burns, K. Leopold, TB08, June 13, 1995.
28. "Determination of the Structure of HCN-BF_3" 47th Annual Ohio State University Symposium on Molecular Spectroscopy, S. W. Reeve, W. A. Burns, F. J. Lovas, R. D. Suenram, K. R. Leopold, R08, June 15, 1992.

Funding

1. "General Chemistry I Recitation: A Pilot Program" J. Merten, W. Burns, Arkansas State University College of Sciences and Mathematics RISC Proposal, $5,000, December 2012-June 2012.
2. "Concepts in Chemistry", J. Trautwein, J. Grady, Ellis Benjamin, W. Burns, Arkansas Science and Technology Authority, No Child Left Behind, $300,000.00, June 2009 - May 2012.
3. "Standoff Explosives Detection" S.D. Allen, J.B. Johnson, W.A. Burns, S.W. Reeve, Depart of Defense Contract W909MY-09-C-0001, administered via the Night Vision Electronic Sensors Directorate (NVESD) Fort Belvoir, VA, Daniel Pinkham, $6,032,114, 2-09 to 2-12, my involvement ended Oct, 2010.
4. "Development of Novel Standoff Multicolor Laser Sensors" S.D. Allen, J.B. Johnson, S. Kudryashov, W.A. Burns, S.W. Reeve, Depart of Defense Contract W39113M-05-C-0158, administered via the US Army Space and Strategic Missile Defense Command, $5,560,000, 9-05 to 5-15-2009.

5. “Near Real-Time Monitoring of Gas Phase Atmospheric Species” Arkansas State University Faculty Research Proposal, $4370, 8/04-7/05.
6. “A Novel Application of Tunable Diode Laser Absorption Spectroscopy: A Real Time Analysis of Constituents of Environmental Tobacco Smoke” Arkansas State University Arkansas Biosciences Institute, $75,000, 1/04 – 12/04.
7. “A Novel Application of Tunable Diode Laser Absorption Spectroscopy: The Fast and Accurate Analysis of Gas Phase Constituents of Environmental Tobacco Smoke” Arkansas State University Arkansas Biosciences Institute, $149,727, 1/03 – 12/03.
8. “Computational Investigations of OC-X (X = BH_3, BF_3, SO_3)” SILO Advisory Council, $3300, November, 2001.
9. “Spreadsheets for Arkansas Science and Math Teachers” Dwight D. Eisenhower Professional Development Program administered by the Arkansas Departments of Education and Higher Education, $30958, November 2000 (co-PI, Dr. Scott Reeve, ASU, Department of Chemistry).
10. “Constructing Chemistry Understanding 2000” Dwight D. Eisenhower Professional Development Program administered by the Arkansas Departments of Education and Higher Education, $50047, November 2000 (co-PI, Dr. Scott Reeve, ASU, Department of Chemistry).
11. “Infrared Spectroscopic Investigation of Donor-Acceptor Complexes Exhibiting Significant Gas-Crystal Phase Structure Differences” SILO Advisory Council, $3300, November 2000.
12. “Computational Chemistry” ASU College of Arts and Sciences Deans Research Award, $320, April 2000.
13. “Spectroscopic Investigation of Cigarette Smoke.” ASU College of Arts and Sciences Dean’s Research Award, February 1999, $400.
14. “Chemistry/Biology/Freshman English Learning Community Pilot Proposal” ASU Retention Review Task Force, April 1999, $500.
15. “Construction of a Computer Automated Solution Calorimeter” ASU College of Arts and Sciences Spring 1999 Professional Development Fund, May 1999, $419.
16. “A Spectroscopic and Computational Investigation of Donor-Acceptor Complexes” ASU Faculty Research Grant, May 1999, $2100.
17. “Computational Investigation of Donor-Acceptor Complexes” ASU College of Arts and Sciences Dean’s Research Award, September 1999, $400.
18. “Special Research Grants for Fall Semester: Infrared Spectroscopic Investigations of Large Gas Phase - Crystal Phase Structure Differences in Donor-Acceptor Complexes” ASU, November 1997, $2340.
19. “Productivity Enhancement Funds: Modernization of General Chemistry Laboratory Curricula”, ASU, October 1997, $17873.

Curriculum Vitae

PERSONAL INFORMATION:

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	P.O. Box 483	1703 Dupwe
	State University, AR 72467	Jonesboro, AR 72401
Phone:	(870) 972-3272	(870) 972-8432
E-mail:	mdraganj@astate.edu	
Website:	http://myweb.astate.edu/mdraganj	

IMMEDIATE RESEARCH INTERESTS:

Inorganic Chemistry: a) The synthesis, structural characterization and reactivity of transition metal complexes containing sulfur-based ligands; b) the modeling of both industrial and biological catalytic systems; and c) synthesis and structural characterization of transition metal complexes with thiophenic ligands.

EDUCATION:

Ph.D. - Summer, 1983; The University of Iowa, Iowa City, IA, Chemistry

B.S. - Fall, 1978; Southeastern Oklahoma State University, Durant, OK, Chemistry and Biology

Thesis Title: Synthesis, Structure and Reactivity of Binary Molybdenum-Sulfur Complexes. Completed under Prof. Dimitri Coucouvanis (Currently at the University of Michigan)

Thesis involved the preparation and structural characterization of sulfur-rich molybdenum complexes and the study of their reactivity towards organic molecules

in an attempt to better understand the hydrodesulfurization (HDS) reaction on MoS_2. Construction of a low temperature HDS reactor and subsequent catalysis experiments were undertaken.

WORK EXPERIENCE:

Adjunct Professor - University of Memphis, 2005 - 2010

Professor - Arkansas State University, 1993 - present

Associate Professor - Arkansas State University, 1989 - 1993

PRF Visiting Professor - Michigan State University, Summer 1989, with Mercouri Kanatzidis

Assistant Professor - Arkansas State University, Aug. 1985 - 1989

PRF Visiting Professor - Oklahoma State University, Summer 1986, with Elizabeth Holt

Research Associate - The University of Illinois, Sept. 1983 - Aug. 1985, with Thomas Rauchfuss

Research Assistant - The University of Iowa, 1981 - Summer 1983

Teaching Assistant - The University of Iowa, 1979 - 1981

Courses: General Chemistry Lab, Organic Lab, Intermediate Lab

WORK EXPERIENCE (cont'd):

Laboratory Technician - Biomedical Sciences Program, Southeastern State University, May 1978 - Dec. 1978

Work involved use of ^{14}C trace in analyzing benzo-[a]-pyrene in cigarette smoke condensates

College work - Southeastern State University, 1976 - May 1978

Laboratory Assistant, prepared reagents and aided students during experiments

Courses taught (ASU): General Physical Science and lab; Introduction to Chemistry; General Chemistry I and lab; General Chemistry II and lab; Honors General Chemistry II; Descriptive Inorganic Chemistry; Inorganic Chemistry; Advanced Inorganic Chemistry; Organometallics; Physical Methods in Inorganic Chemistry; Chemistry Seminar; Graduate Seminar; Special Problems in Chemistry; Research in Chemistry; Chemical Literature

PROFESSIONAL ORGANIZATIONS:

Member, American Chemical Society, 1983 - present
Member, Inorganic Division, A.C.S., 1983 - present
Member, Arkansas Academy of Science, 1986 - present
Affiliate member, IUPAC, 1986 - 1992
Member, American Association for the Advancement of Science, 1986 - 1993
Member, Arkansas Science Teachers Association, 1987 - 2000
Member, Sigma Xi, 1988 - present (inactive)
Member, Chemical Education Division, A.C.S., 1992 - present
Member, Solid State Subdivision, A.C.S., 1992 - present
Member, Organometallic Subdivision, A.C.S., 1992 - present
Member, Council on Undergraduate Research, 1994 - 2003
Member, Mid-south Inorganic Chemists Association, 2002 - present

PROFESSIONAL ACTIVITIES:

Co-director, Northeast Arkansas Regional Science Fair, 1985 – 88

Faculty Advisor, A.S.U. American Chemical Society, Student Affiliates, 1986 - 92, 94 - 95, 2001 - 2008

Secretary/Treasurer, A.S.U. Club, Sigma Xi, 1988 - 90

A.S.U. Faculty Research Committee, 1988 - 91

Arkansas DOE EPSCoR Committee, Implementation Proposal Subcommittee, 1991 - 95

A.C.S. 1993 First Term General Chemistry Examination Committee

A.C.S. 1995 First Term General Chemistry Examination Committee

Official Chemistry Professor of ROCK103, Memphis, TN

Arkansas EPSCoR Committee, 1999 - 2002

Vice President, Arkansas Academy of Science, 1998-1999

President-Elect, Arkansas Academy of Science, 1999-2000

President, Arkansas Academy of Science, 2000-2001

PROFESSIONAL ACTIVITIES (cont'd):

Past-President, Arkansas Academy of Science, 2001-2002

Associate Editor, J. Ark. Acad. Sci., 2000, 2002

A.C.S. Division of Chemical Education Web Committee 2002 – 2003

PROFESSIONAL ACHIEVEMENTS:

University of Iowa Teaching/Research Fellowship, 1980-1983

1991-92 Arkansas State University Professional Service Award

1992 American Chemical Society Phoenix Award - most inventive project, 1991 National Chemistry Week (Faculty Advisor)

Who's Who among America's Teachers, 1994, 1996, 1998

One of the Top 10858 Cited Chemists, 1981 - 1997

College of Arts and Sciences Dean's Distinguished Faculty Achievement Award 2002

2006 Time Magazine Person of the Year

PROFESSIONAL ENHANCEMENT:

Participant, Organometallic Chemistry and Catalysis Mini-course, NSF Southeastern U.S. Undergraduate Faculty Enhancement Program, Macon, GA, March 7-8, 1989.

Audit, Solid State Physics, Arkansas State University, spring 1990.

Participant, Solid State Chemistry and Superconductivity Mini-course, NSF Southeastern U.S. Undergraduate Faculty Enhancement Program, Fort Valley, GA, March 16-17, 1990.

Participant, FT-NMR Workshop, NSF Undergraduate Faculty Enhancement Program, Central Missouri State University, Warrensburg, MO, May 21-26, 1995.

Faculty Leave, University of Memphis, July 3 - August 4, 1995 with Tom Cundari.

PUBLICATIONS:

1. Determination of Benzo[a]pyrene in Cigarette Smoke Condensate by Liquid Chromatography on Amberlite XAD-2. Jack L. Robinson, Monte A. Marshall, Mark E. Draganjac and Lawrence C. Noggle. Analytica Chemica Acta, 115, (1980), 229-238.

2. A New Mo(IV) Thioanion Containing the Mo=S_t Unit. Synthesis and Structural Characterization of $(Et_4N)_2MoS_9$. E. D. Simhon, N. C. Baenziger, M. Kanatzidis, M. Draganjac and D. Coucouvanis. J. Am. Chem. Soc., 103, (1981), 1218-1219.

3. Synthesis, Interconversions, and Structural Characterization of the $[(S_4)_2MoS]^{2-}$, $[(S_4)_2MoO]^{2-}$, $(Mo_2S_{10})^{2-}$ and $(Mo_2S_{12})^{2-}$ Anions. M. Draganjac, E. Simhon, L. T. Chan, M. Kanatzidis, N. C. Baenziger and D. Coucouvanis. Inorganic Chem., 21, (1982), 3321-3332.

4. Tetrakis(Benzenethiolato) Metallate(2-) Complexes, $[M(SPh)_4]^{2-}$, of Manganese, Iron, Cobalt, Zinc and Cadmium and Derivatives of the $[Fe(SPh)_4]^{2-}$ Complexes. D. Coucouvanis, C. N.

Murphy, E. Simhon, P. Stremple and M. Draganjac. Inorganic Synthesis, Vol. XXI, Ed. J. P. Fackler, (Wiley and Sons, NY), 1982, 23-28.

PUBLICATIONS (cont'd):

5. The Formation of Perthiocarbonate Ligands Following the Addition of CS_2 to Binary Mo-S Complexes. The Crystal and Molecular Structures of the $(Ph_4P)_2[(CS_4)_2MoS]\cdot DMF$ and $(Ph_4P)_2[(CS_4)Mo_2S_4(CS_4)]\cdot 1/2DMF$ Complexes. D. Coucouvanis and M. Draganjac. J. Am. Chem. Soc., 104, (1982), 6280-6282.

6. Dinuclear Fe-Mo-S Complexes Containing the FeS_2Mo Core. The Syntheses, Ground-State Electronic Structures and Crystal and Molecular Structures of the $[(C_6H_5)_4P]_2[(C_6H_5S)_2FeS_2MoS_2]$; $[(C_2H_5)_4N]_2[(C_6H_5S)_2FeS_2WS_2]$; and $[(C_6H_5)_4P]_2[(S_5)FeS_2MS_2]$ (M=Mo, W) Complexes. D. Coucouvanis, P. Stremple, E. D. Simhon, D. Swenson, N. C. Baenziger, M. Draganjac, L.T. Chan, V. Papaefthymiou, A. Simopoulos, A. Kostikas and V. Petrouleas. Inorganic Chem., 22, (1983), 293-308.

7. The Reaction of MoS_9^{2-} with Di-carboxymethyl Acetylene. The Crystal and Molecular Structure of $(Ph_4P)_2Mo[S_2C_2(COOMe)_2]_3$. A Trigonal Prismatic Complex with a New Dithiolene Ligand. M. Draganjac and D. Coucouvanis. J. Am. Chem. Soc., 105, (1983), 139-140.

8. Synthesis and Structure of a Stable Complex Featuring an S-Bound Dibenzothiophene Ligand: $RuCl_2(4\text{-}R_2P(DBT))_2$ (DBT = Dibenzothiophene). Stella M. Bucknor, M. Draganjac, Thomas B. Rauchfuss, Charles J. Ruffing, William C. Fultz and Arnold L. Rheingold. J. Am. Chem. Soc., 106, (1984), 5379-5381.

9. Transition Metal Polysulfides: Coordination Compounds with Purely Inorganic Chelate Ligands. Mark Draganjac and Thomas B. Rauchfuss. Angew. Chem. Int. Ed. Engl., 24, (1985), 742-757.

10. A Model for Thiophene Chemisorption: A Stabilized, η^1, S-Thiophene Complex and Its Relationship to η^5-Coordination. M. Draganjac, Charles J. Ruffing and Thomas B. Rauchfuss. Organometallics, 4, (1985), 1909-1911.

11. Unique Reactivity Characteristics of Mo-coordinated S_2^{2-} and S_4^{2-} Ligands, D. Coucouvanis, A. Hadjikyriacou, M. Draganjac, M. G. Kanatzidis and O. Ileperuma. Polyhedron, 5, (1986), 349-356.

12. Structure of (Dimethyldithiocarbamate)(triphenylphosphine)(η^5-cyclopentadiene) Ruthenium(II). A. W. Cordes and M. Draganjac, Acta Cryst., Sect. C., C44, (1988), 363-364.

13. The Activation and Desulfurization of Thiophene and Benzothiophene by Iron Carbonyls. Ann E. Ogilvy, M. Draganjac, Thomas B. Rauchfuss and Scott R. Wilson. Organometallics, 7, (1988), 1171-1177.

14. Synthesis of $[Ru(CO)_2(Se_4)_2]^{2-}$. An Anionic Ru^{2+} Polychalcogenide Complex. M. Draganjac, Sandeep Dhingra, Song-Ping Huang and Mercouri Kanatzidis. Inorganic Chem., 29, (1990), 590-591.

15. Comparison of the Molecular Structure of Monovalent Cation Salts of N, N-Dimethyldithiocarbamate. Novel Synthesis and Crystal Structure of $(P\emptyset_4)(S_2CN(CH_3)_2)\cdot 2H_2O$. M. Draganjac, David Minick and E. M. Holt. Proc. Ar. Acad. Sci., 44, (1990), 35-37.

PUBLICATIONS (cont'd):

16. Studies of the Reactivity of Binary Thio- and Tertiary Oxothiomolybdates toward Electrophiles. Reactions of Dicarbomethoxyacetylene and the Synthesis and Structures of $[Et_4N]_2[MoO(L)_2]$, anti-$[Et_4N]_2[Mo_2O_2(L)_2]$, syn-$[Ph_4P]_2[Mo_2O_2(L)_2]\cdot 2DMF$, $[Ph_4P]_2[Mo(L)_3]\cdot DMF,C_6H_6$ and $[Ph_4P]_2[Mo_2S_2(L)_4]\cdot 2CH_2Cl_2$ Complexes (L = 1,2-Dicarbomethoxy-1,2-ethylenedithiolate). D. Coucouvanis, A. Hadjikyriacou, A. Toupadakis, Sang-Man Koo, O. Ileperuma, M. Draganjac and A. Salifoglou. Inorganic Chem., 30, (1991), 754-767.

17. New Organometallic Dithiooxalate Compound. Synthesis and Structure of $[Cp_2ZrCl]_2(dto)$. Colin A. Hester, M. Draganjac and A. W. Cordes. Inorg. Chim. Acta, 184, (1991), 137-139.

18. Reactivity of the $Mo(S_x)$ Functional Groups in Thio- and Oxothiomolybdate Complexes toward Carbon Disulfide. Synthesis and Reactivity of Trithio- and Perthiocarbonate Complexes of Mo(IV) and Mo(V) and the Structural Characterization of trans-$[Ph_4P]_2[Mo(S)(CS_4)_2]\cdot$DMF (I), cis-$[Ph_4P][Et_4N][Mo(S)(CS_4)_2]$ (II), cis-syn-$[Ph_4P]_2[Mo_2(S)_2(\mu\text{-}S)_2(CS_4)_2]\cdot 1/2$DMF (III), syn-$[Ph_4P]_2[Mo_2(S)_2(\mu\text{-}S)_2(CS_3)_2]$ (IV), and syn-$[Et_4N]_2[Mo_2(O)_2(\mu\text{-}S)_2(CS_4)(CS_3)]$ (V). D. Coucouvanis, M. E. Draganjac, S. M. Koo, A. Toupadakis and A. I. Hadjikyriacou. Inorganic Chem., 31, (1992), 1186-1196.

19. Model for the CO Poisoning of Hydrodesulfurization Catalysts. Synthesis and Structure of $\{Ru(CO)[(PPh_2SC_{12}H_7)]_2Cl_2\}\cdot 2CH_2Br_2$. M. Draganjac, T. B. Rauchfuss, and A. L. Rheingold. Proc. Ark. Acad. Sci., 46, (1992), 36-38.

20. Molecular structures of $[CpRu(PPh_3)(dtoxa\text{-}H_2O)]BF_4$ and $\{[CpRu(PPh_3)_2]_2(\mu\text{-dtoxa})]\}(BF_4)_2$, dtoxa = dithiooxamide. M. Draganjac, David Minick and A. W. Cordes. J. Cryst. Spec. Res., 23, (1993), 265-271.

21. The Reaction of $CpRu(PPh_3)_2^+$ with Organic Thiols. Synthesis and Characterization of $[CpRu(PPh_3)_2(RSH)]BF_4$, R = benzyl, phenethyl, and the Molecular and Crystal Structure of $[CpRu(PPh_3)_2(C_6H_5CH_2CH_2SH)]BF_4\cdot CH_2Cl_2$. Haengsoon Park, David Minick, M. Draganjac, A. W. Cordes, R. L. Hallford and Gordon Eggleton. Inorg. Chim. Acta, 204, (1993), 195-198.

22. Crystal and molecular structure of $[CpRu(PPh_3)_2(t\text{-}C_4H_9SH)]BF_4$. David Minick, M. Draganjac, Joey W. Crump and A. W. Cordes. J. Cryst. Spec. Res., 23, (1993), 629-632.

23. The S-H Stretching Frequencies in Ruthenium Mercaptan Complexes and the Crystal and Molecular Structures of $[CpRu(PPh_3)_2(s\text{-}C_4H_9SH)]BF_4\cdot CH_2Cl_2$ and $[CpRu(PPh_3)_2(i\text{-}C_4H_9SH)]BF_4\cdot CH_2Cl_2$. Haengsoon Park, David Minick, M. Draganjac, Joey W. Crump, A. W. Cordes and Elizabeth M. Holt. Proc. Ark. Acad. Sci., 47, (1993), 142-144.

24. The Reaction of $CpRu(PPh_3)_2^+$ with Trimethylenesulfide. Synthesis and Molecular and Crystal Structure of $[CpRu(PPh_3)_2(SC_3H_6)]CF_3SO_3$. Haengsoon Park, M. Draganjac, S. R. Scott, A. W. Cordes and Gordon Eggleton. Inorg. Chim. Acta, 221, (1994), 157-160.

25. Structure of Cyclopentadienylbis(triphenylphosphine)(thioacetamide)ruthenium(II) tetrafluoroborate. C. D. Bryan, A. W. Cordes and M. Draganjac. Acta Cryst., Sect. C, 50, (1994), 1231-1233.

PUBLICATIONS (cont'd):

26. Reaction of Titanocene Dichloride with Acetylenedicarboxylate. Tanya L. Hagler, M. Draganjac, Paul Nave, J. Ed Bennett, Farooq Khan, R. Engelken, Gerard Williams, Chris Poole and Kwok Fai Yu. Proc. Ark. Acad. Sci., 48, (1994), 63-66.

27. Thermal Decomposition Studies of Selected Transition Metal Polysulfide Complexes. II. Effect of Atmosphere on Decomposition. Benjamin Rougeau and M. Draganjac. Proc. Ark. Acad. Sci., 48, (1994), 151-153.

28. Molecular structure of $[CpRu(PPh_3)_2(C_6H_{11}SH)]BF_4 \cdot CH_2Cl_2$. Yanjing Jiang, M. Draganjac and A. W. Cordes. J. Chem. Cryst., 25, (1995), 653-656.

29. Environmental Chemistry as Focus in the Undergraduate Curriculum. D. M. Chittenden, M. E. Draganjac and W. V. Wyatt. J. Chem. Ed., 72, (1995), 908.

30. Crystal and molecular structure of $Cp_2Mo(mto)$, mto = monothiooxalate. Tanya Hagler, M. Draganjac and Clifton Woods. J. Chem. Cryst., 25, (1995) 871-874.

31. Structural Assignments in $[CpRu(PPh_3)_2(n\text{-}PrSH)]BF_4$ by NMR Techniques. Mark Draganjac and Robert Zey. NMR Exercises for the Undergraduate Laboratory/Classroom, (Central Missouri State University Press, Warrensburg, MO:1995).

32. Molecular structure of $[CpRu(PPh_3)_2(tht)]BF_4$, tht = tetrahydrothiophene. Yanjing Jiang, M. Draganjac and A. W. Cordes. J. Chem. Cryst., 26, (1996) 657-660.

33. An Infrared Diode Spectrometer for the Study of Jet Cooled Gases. A. Bednar, E. Barnett, C. Lindsey, T. Heath, P. Williams, M. Draganjac and S. W. Reeve. J. Ark. Acad. Sci, 52, (1998) 17-27.

34. Infrared Diode Laser Spectroscopy of Jet Cooled Tungsten Hexacarbonyl. A. Bednar, C. Lindsey, P. Williams, T. Heath, M. Draganjac and S. W. Reeve. Proc. 5th Annual Arkansas Undergraduate Research Conference, (1998) 11.

35. Synthesis and Infrared Spectroscopy of Transition Metal Carbonyls. C. Lindsey, A. Bednar, P. Williams, T. Heath, M. Draganjac and S. W. Reeve. Proc. 5th Annual Arkansas Undergraduate Research Conference, (1998) 71.

36. Synthesis and molecular structure of $[CpRu(1,4,7\text{-}S_3C_6H_{12})]O_3SCF_3$. M. Green, M. Draganjac, Y. Jiang and A. W. Cordes. J. Chem. Cryst., 29, (1999), 273-276.

37. Synthesis and Molecular Structure of $[CpRu(PPh_3)(pms)_2]OTfl\cdot 3/4C_2H_4Cl_2$. P. M. Nave, M. Draganjac, A. W. Cordes and T. M. Barclay. J. Ark. Acad. Sci., 53, (1999), 147-149.

38. Synthesis, molecular structure and computational study of a ruthenium bis(thietane) complex. Paul M. Nave, M. Draganjac, B. Ward, A.W. Cordes, T.M. Barclay, T. R. Cundari, J. J. Carbó, F. Maseras. Inorg. Chim. Acta, 316, (2001) 13-18.

PUBLICATIONS (cont'd):

39. Synthesis of a Ruthenium-Thioxane Complex. A. Wroble, S. Sproles, M. Draganjac, P. M. Nave, J. Ark. Acad. Sci., 55, (2001), 193-195.

40. Synthesis of a Ruthenium-tetra(tht)dichloride Compound and the Molecular Structure of the partially Oxidized Compound $RuCl_2(tht)_{2.2}(tht\text{-}O)_{1.8}$. L. A. Thornton, M. Draganjac, Andres Meza, A. W. Cordes. J. Ark. Acad. Sci., 55, (2001), 189-190.

41. Synthesis of Ruthenium Di-Mercaptan Complexes. B. McNew, J. Chittenden, A. Wroble, S. Franks, M. Draganjac, A. W. Cordes. Proc. J. Ark. Undergrad. Res. Conf., (2001), 185-189.

42. Reaction of $CpRu(PPh_3)_2Cl$ with Six-member cyclothioethers. Structures of the $[CpRu(PPh_3)_xL]X$ Complexes (L = pentamethylene sulfide, x = 2, X = BF_4^- ; L = 1,3-dithiane, 1,3,5-trithiane, x = 2, X = $CF_3SO_3^-$; L = 1,4-dithiane, x = 1, X = BF_4^-). Mark Green, M. Draganjac, Yanjing Jiang, A. W. Cordes, C. D. Bryan, J. K. Dixon, S. L. Folkert and C.-H. Yu, J. Chem. Cryst., 33, (2003), 473-479.

43. The Quest for Chain-Link Hydrogen Bonded Capsules: Self-Assembly of C-Methyl Calix[4]resorcinarene with 1,2-bis(5'-pyrimidyl) ethyne. Ivan Georgiev, Charles L. Barnes, Mark Draganjac and Eric Bosch, Crystal Growth and Design, (2004), 4, 235-239.

44. Microwave Syntheses and Thermal Gravimetric Analysis of *trans*-Hydrogen bis(dimethylsulfoxide)tetrachlororuthenate(III). S. Chui, M. Draganjac, E. Benjamin and B. Rougeau, J. Ark. Acad. Sci., (2009), 63, 180-1.

45. Microwave Synthesis of *cis*-Dichlorotetrakis(dimethylsulfoxide)ruthenium(II). A. Harvey, M. Draganjac, S. Chui, R. Snell, and E. Benjamin, J. Ark. Acad. Sci., (2009), 63, 185.

46. Molecular Structure of *fac*-aquadichlorotris(dimethylsulfoxide)ruthenium(II). L. Foster, J. Hardin, M. Draganjac, B. C. Noll, J. Ark. Acad. Sci., (2010), 64, 134-5.

47. Cavity ringdown laser absorption spectroscopy of $^{13}C_2H_2$ in the 13,300 cm^{-1} region. Christopher J Lue, Michael N. Sullivan, Mark Draganjac, Scott W. Reeve, J. Mol. Spect., (2012), 273, 6-10.

48. Spectroscopic Study of Ruthenium-mercaptan Complexes. Molecular Structure of $[CpRu(PPh_3)_2(n\text{-}C_5H_{12}SH)]BF_4$. Jan Annaratone, M. Draganjac, and David Vicic, Manuscript in preparation.

49. NMR study of bis(cyclothioether) complexes of ruthenium and molecular structure of $[CpRu(PPh_3)(tht)_2]OTfl$. P. M. Nave, M. Draganjac, M. Panigot, A.W. Cordes, T.M Barclay, R.W. Curley, Jr. , C. Cottrell, Manuscript in preparation.

RESEARCH REPORTS:

1. Synthetic Models for Hydrodesulfurization Catalyst. M. Draganjac. 33rd Annual Report on Research, The Petroleum Research Fund, American Chemical Society, (1989), 290-291.

2. Synthetic Models for Hydrodesulfurization Catalyst. M. Draganjac. 34th Annual Report on Research, The Petroleum Research Fund, American Chemical Society, (1990), 100-101.

PRESENTATIONS:

1. Determination of Benzopyrene in Cigarette Smoke Condensate by Liquid-Solid Chromatography. Mark E. Draganjac, Monte A. Marshall, Jack L. Robinson. 34th Southwest Regional Meeting, Am. Chem. Soc., Corpus Christi, TX, Nov. 29-Dec. 1, 1978.

2. Aliphatic Trisulfides. New Versatile Reagents for the Oxidative Addition of Sulfur to Inorganic Complexes. D. Coucouvanis, E.D. Simhon, P. Stremple, M. Draganjac, M. Kanatzidis. Symposium on Transition Metal-Sulfur Interactions. 16th Great Lakes Regional Meeting, Am. Chem. Soc., Normal, IL, June 7-9, 1982.

3. Reactions of First Row Transition Metal Mercaptide Complexes with Dibenzyl Trisulfide. Brent E. Detering, Dimitri Coucouvanis, Prakash Patil, Philip Stremple, Mark Draganjac. 185th National Meeting, Am. Chem. Soc., Seattle, WA, Mar. 20-25, 1983.

4. Reactivity Studies of Two Binary Molybdenum-Sulfur Complexes: MoS_9^{2-} and $Mo_2S_{10}^{2-}$, Mark E. Draganjac, Dimitri Coucouvanis. Symposium on Catalytic Chemistry of Transition Metal Sulfide Systems. 186th National Meeting, Am. Chem. Soc., Washington, D.C., Aug. 28-Sept. 2, 1983.

5. Synthesis, Structures, and Reactivities of Binary Molybdenum Sulfide Complexes. D. Coucouvanis, M. Draganjac. Symposium on Sulfided Clusters; Synthesis, Bonding and Reactivity. 3rd Joint Great Lakes and Central Regional Meeting, Am. Chem. Soc., Kalamazoo, MI, May 23-25, 1984.

6. The Chemistry of Iron Sulfides in Coal: Coal Characterization and Desulfurization Studies. T. B. Rauchfuss, M. E. Draganjac. 2nd Annual Contractors' Technical Meeting, Illinois Coal Research Board, Champaign, IL, Oct. 30-Nov. 1, 1984.

7. The Coordination Chemistry of S-Bound Thiophenes. Mark Draganjac, Thomas B. Rauchfuss, Charles Ruffing, Elise Benjamin. 19th Great Lakes Regional Meeting, Am. Chem. Soc., W. Lafayette, IN, June 10-12, 1985.

8. Recent Advances in the Synthesis and Reactivities of Binary Mo/S Compounds. D. Coucouvanis, A. Hadjikyriacou, M. Draganjac. Symposium on Polynuclear Homo- and Heterometallic Compounds with Sulfur Ligands. 18th Central Regional Meeting, Am. Chem. Soc., Toledo, OH, June 2-4, 1986.

9. The Novel Synthesis of Tetraphenylphosphonium N, N-Dimethyldithiocarbamate. David Minick, Michael Martin, M. Draganjac, Elizabeth Holt. 7th Memphis State University Undergraduate Chemistry Conference, Memphis, TN, Feb. 20, 1987.

PRESENTATIONS (cont'd):

10. The Structural Characterization of Copper(I)Halide Complexes of Pyrazine, Quinoxaline and Phenazine. M. Draganjac, Jeffery Armstrong, Abdas-Sami Malik, Elizabeth M. Holt. 71st Annual Arkansas Academy of Science Meeting, North Little Rock, AR, Apr. 3-4, 1987.

11. Desulfurization and Activation of Thiophenes by Iron Carbonyls. A. E. Ogilvy, T.B. Rauchfuss, M. Draganjac. 194th National Meeting, Am. Chem. Soc., New Orleans, LA, Aug. 30-Sept. 4, 1987.

12. Synthesis, Structure and Reactivity of $[(C_5H_5)Ru(P(C_6H_5)_3)_2(RSH)]\ BF_4$. M. Draganjac, D. Minick. 194th National Meeting, Am. Chem. Soc., New Orleans, LA, Aug. 30-Sept. 4, 1987.

13. The Coordination Chemistry of S-Bound Thiophenes, M. Draganjac. Southeastern Oklahoma State University, Durant, OK, Invited Lecture, Mar. 10, 1988.

14. Ruthenium Mercaptan Complexes, D. Minick, Joey Crump, M. Draganjac, A.W. Cordes, F. Evans. 72nd Annual Arkansas Academy of Science Meeting, Russellville, AR, Apr. 1-2, 1988.

15. Ruthenium Mercaptan Complexes. David Minick, Joey Crump, Craig Frayer, M. Draganjac. Washington University Undergraduate Research Symposium, St. Louis, MO, Oct. 7, 1988.

16. Synthetic Models for Hydrodesulfurization Catalysts. M. Draganjac. Hendrix College, Conway, AR, Invited Lecture, Nov. 1, 1988.

17. New Organometallic Dithiooxalate Compounds: Synthesis, Structure and Reactivity. Colin A. Hester, M. Draganjac, A.W. Cordes. 45th Southwest Regional Meeting, Am. Chem. Soc., Baton Rouge, LA, Dec. 6-8, 1989.

18. Comparison of the Molecular Structures of Monovalent Cation Salts of N,N-Dimethyldithiocarbamate. Novel Synthesis and Crystal Structure of $(P\emptyset_4)(S_2CN(CH_3)_2)\cdot 2H_2O$. M. Draganjac, David Minick, E.M. Holt. 74th Annual Arkansas Academy of Science Meeting, Jonesboro, AR, Apr. 6-7, 1990.

19. Thermal Decomposition Studies of Selected Transition Metal Polysulfide Complexes. Benjamin Rougeau, J.E. Bennett, M. Draganjac. 74th Annual Arkansas Academy of Science Meeting, Jonesboro, AR, Apr. 6-7, 1990.

20. Synthesis of $[Ru(CO)_2(Se_4)_2]^{2-}$. An Octahedral Ru^{2+} Poly-Selenide. M. G. Kanatzidis, M. Draganjac, S.-P. Huang, S. Dhingra. 199th National Meeting, Am. Chem. Soc., Boston, MA, Apr. 22-27, 1990.

21. The Coordination Chemistry of S-Bound Thiophenes. M. Draganjac. University of Arkansas, Little Rock, AR, Invited Lecture, Feb. 4, 1991.

22. Reactions of $[CpRu(PPh_3)_2]^+$ with Weak Sulfur Donor Ligands. M. Draganjac. University of Arkansas, Pine Bluff, AR, Invited Lecture, Feb. 21, 1991.

PRESENTATIONS (cont'd):

23. Reactions of $[CpRu(PPh_3)_2]^+$ with Weak Sulfur Donor Ligands. M. Draganjac, David Minick, A.W. Cordes. 201st National Meeting, Am. Chem. Soc., Atlanta, GA, Apr. 14-19, 1991.

24. When Pigs Can Fly. The Student Affiliate Program at Arkansas State University. M. Draganjac, S. Deatherage, L. Gilbreath, L. Jenkins, B. Rougeau. Symposium on Imaginative Approaches to Student Affiliate Sections. 201st National Meeting, Am. Chem. Soc., Atlanta, GA, Apr. 14-19, 1991.

25. Reactions of $[CpRu(PPh_3)_2]^+$ with Weak Sulfur Donor Ligands. M. Draganjac. University of Oklahoma, Norman, OK, Invited Lecture, May 2, 1991.

26. Reaction of Metallocene Dichlorides with Dithiooxalate. Synthesis of New Mono- and Dithiooxalate Compounds. M. Draganjac, Susan Deatherage, Tanya Hagler, Clifton Woods, 47th Southwest Regional Meeting, Am. Chem. Soc., San Antonio, TX, Oct. 2-4, 1991.

27. Synthetic Models for HDS Catalysts. M. Draganjac, DOE Site Visit, Fayetteville, AR, Mar. 3-4, 1992.

28. Model for the CO Poisoning of Hydrodesulfurization Catalysts. Synthesis and Structure of $\{Ru(CO)[(PPh_2SC_{12}H_7)]_2Cl_2\}\cdot 2CH_2Br_2$. M. Draganjac, T.B. Rauchfuss, A.L. Rheingold. 76th Annual Arkansas Academy of Science Meeting, Conway, AR, Apr. 3-4, 1992.

29. Synthetic Models for HDS Catalysts. M. Draganjac, University of Central Arkansas, Conway, AR, Invited Lecture, Feb. 11, 1993.

30. The S-H Stretching Frequencies in Ruthenium Mercaptan Complexes and the Crystal and Molecular Structures of $[CpRu(PPh_3)_2(s\text{-}C_4H_9SH)]BF_4\cdot CH_2Cl_2$ and $[CpRu(PPh_3)_2(i\text{-}C_4H_9SH)]BF_4\cdot CH_2Cl_2$. Haengsoon Park, David Minick, M. Draganjac, Joey W. Crump, A. W. Cordes, Elizabeth M. Holt. 77th Annual Arkansas Academy of Science Meeting, Arkadelphia, AR, Apr. 2-3, 1993.

31. When Pigs Can Fly. The Student Affiliate Program at Arkansas State University. M. Draganjac, 28th Oklahoma Meeting-in-Miniature, Durant, Ok, Invited Lecture, Apr. 17, 1993.

32. Thermal Decomposition Studies of Selected Transition Metal Polysulfide Complexes. II. Effect of Atmosphere on Decomposition. Benjamin Rougeau, M. Draganjac. 78th Annual Arkansas Academy of Science Meeting, Jonesboro, AR, Apr. 8-9, 1994.

33. New Organometallic Oligomer. Reaction of Titanocene Dichloride with Acetylenedicarboxylate. Tanya L. Hagler, M. Draganjac, Paul Nave, J. Ed Bennett, Farooq Khan, R. Engelken, Gerard Williams, Chris Poole, Kwok Fai Yu. 78th Annual Arkansas Academy of Science Meeting, Jonesboro, AR, Apr. 8-9, 1994.

34. The Reaction of $CpRu(PPh_3)_2^+$ with Cyclothioethers. M. Draganjac, Mark Green, Yanjing Jiang, A. W. Cordes. 78th Annual Arkansas Academy of Science Meeting, Jonesboro, AR, Apr. 8-9, 1994.

PRESENTATIONS (cont'd):

35. Differential Thermal and Gravimetric Analysis of the Cr-O-H_2O System. J. Edward Bennett, M. Draganjac, Eric Barnett. 78th Annual Arkansas Academy of Science Meeting, Jonesboro, AR, Apr. 8-9, 1994.

36. The Reaction of $CpRu(PPh_3)_2^+$ with Cyclothioethers. Mark Green, M. Draganjac, Yanjing Jiang, A. W. Cordes, C. D. Bryan, J. K. Dixon, S. L. Folkert, C.-H. Yu. 15th Annual Undergraduate Chemistry Conference, University of Memphis, Memphis TN, March 11, 1995.

37. The Reaction of $CpRu(PPh_3)_2^+$ with Cyclothioethers. M. Draganjac, Mark Green, Yanjing Jiang, A. W. Cordes, C. D. Bryan, J. K. Dixon, S. L. Folkert, C.-H. Yu. 210th National Meeting, Am. Chem. Soc., Chicago, IL, Aug. 20-24, 1995.

38. Chemistry Carnival '94. S. Cady, M. Draganjac, C. E. Gerdes, M. Green, S. Hemphill, S. Hemphill, I. Khan, T. McNabb, C. Nicholson, S. Reeve, B. Rougeau, S. Selby, J. Shipman, N. Wright. 210th National Meeting, Am. Chem. Soc., Chicago, IL, Aug. 20-24, 1995.

39. Structural Assignments in $[CpRu(PPh_3)_2(n\text{-}PrSH)]BF_4$ by NMR Techniques. Mark Draganjac, Robert Zey. 30th Midwest Regional Meeting, Am. Chem. Soc., Joplin, MO, Nov. 1, 1995.

40. Organometallic Ru-S Compounds: Models for the HDS Catalyst/Substrate Interactions. M. Draganjac, University of Memphis, Memphis, TN, Invited Lecture, Feb. 16, 1996.

41. High Resolution Spectroscopic Investigation of Transition Metal Carbonyls and Related Compounds. A. Bednar, P. Williams, C. Lindsey, E. Barnett, M. Draganjac, S.W. Reeve. 214th National Meeting, Am. Chem. Soc., Las Vegas, NV, Sept. 7, 1997.

42. Multiple Ligand Substitution of $CpRu(PPh_3)_2^+$ with Tetrahydrothiophene. Molecular Structure of $[CpRu(PPh_3)(tht)_2]Otfl$. Paul M. Nave, Mark Draganjac, Bryon Ward, A. W. Cordes, Tosha M. Barclay. 215th National Meeting, Am. Chem. Soc., Dallas, TX, Mar. 29, 1998.

43. High Resolution Infrared Spectroscopy of Manganese Pentacarbonyl Bromide. A. Bednar, S. W. Reeve, C. Lindsey, P. Williams, M. Draganjac. 215th National Meeting, Am. Chem. Soc., Dallas, TX, Mar. 30, 1998.

44. Infrared Laser Spectroscopy of Jet-cooled Manganese Pentacarbonyl Chloride. C. Lindsey, S. W. Reeve, T. Bednar , P. Williams, M. Draganjac. 215th National Meeting, Am. Chem. Soc., Dallas, TX, Mar. 30, 1998.

45. Multiple Ligand Substitution of $CpRu(PPh_3)_2^+$ with Tetrahydrothiophene. Molecular Structure of $[CpRu(PPh_3)(tht)_2]OTfl$. Paul M. Nave, Mark Draganjac, Bryon Ward, A. W. Cordes, Tosha M. Barclay. 82nd Meeting, Ark. Acad. Sci., N. Little Rock, AR, Apr. 3-4, 1998.

46. Infrared Laser Spectroscopy of Jet Cooled Manganese Pentacarbonyl Halides. C. Lindsey, A. Bednar, P. Williams, E. Barnett, M. Draganjac, S.W. Reeve. 82nd Meeting, Ark. Acad. Sci., N. Little Rock, AR, Apr. 3-4, 1998.

PRESENTATIONS (cont'd):

47. Infrared Laser Spectroscopy of Jet Cooled Molecules. A. Bednar, C. Lindsey, P. Williams, E. Barnett, M. Draganjac, S.W. Reeve. 82nd Meeting, Ark. Acad. Sci., N. Little Rock, AR, Apr. 3-4, 1998.

48. Chemical and Physical Properties of Transition Metal Carbonyl Compounds. C. Lindsey, A. Bednar, P. Williams, M. Draganjac, S.W. Reeve. 6th Annual Arkansas Space Grant Consortium Symposium, Little Rock, AR, Apr. 24, 1998.

49. Chemical and Physical Properties of Transition Metal Carbonyl Compounds. A. Bednar, C. Lindsey, P. Williams, M. Draganjac, S.W. Reeve. 6th Annual Arkansas Space Grant Consortium Symposium, Little Rock, AR, Apr. 24, 1998.

50. Ligand Substitution Reactions of $[CpRu(PPh_3)(tht)_2]OTfl$. Molecular Structure of $[CpRu(PPh_3)(pms)_2]OTfl \cdot C_2H_4Cl_2$, pms = pentamethylene sulfide. Paul Nave, Mark Draganjac, A. W. Cordes, Tosha M. Barclay. 83rd Meeting, Ark. Acad. Sci., Russellville, AR, Apr. 2-3, 1999.

51. Infrared Laser Spectroscopy of Jet-cooled Organometallic Compounds. Alan Ford, S. Reeve, M. Draganjac. 6th Annual Arkansas Undergraduate Research Conference. Arkadelphia, AR, Apr. 24, 1999.

52. Synthesis and Structure of a Ruthenium Bisthietane Complex. M. Draganjac, P. M. Nave, A. W. Cordes, T. M. Barclay, T. Cundari. 218th National Meeting, Am. Chem. Soc., New Orleans, LA, Aug. 22, 1999.

53. Infrared Laser Spectroscopy of Jet-cooled Organometallic Compounds. S. Reeve, A. Ford, M. Draganjac. 218th National Meeting, Am. Chem. Soc., New Orleans, LA, Aug. 25, 1999.

54. The Reaction of $CpRu(PPh_3)_2^+$ with Potentially Chelating Heterocycles. Amanda Throgmartin, Scotty Sproles, M. Draganjac, 20th Annual University of Memphis Undergraduate Chemistry Conference, March 4, 2000.

55. Synthesis and Structural Characterization of $[CpRu(PPh_3)L_2]OTfl$ complexes, L = thietane, tetrahydrothiophene and pentamethylene sulfide. Scotty Sproles, M. Draganjac, P. M. Nave, M. J. Panigot, Robert W. Curley, Jr., T. Cundari, 20th Annual University of Memphis Undergraduate Chemistry Conference, March 4, 2000.

56. The Reaction of $CpRu(PPh_3)_2^+$ with Potentially Chelating Heterocycles. Amanda Throgmartin, Scotty Sproles, M. Draganjac, 7th Annual Arkansas Undergraduate Research Conference, Arkadelphia, AR, April 28-29, 2000.

57. Synthesis and Characterization of a Ruthenium-thioxane Complex. Mark Draganjac, Amanda Throgmartin, Scotty Sproles, 220th National Meeting, American Chemical Society, Washington, DC, August 20-24, 2000.

PRESENTATIONS (cont'd):

58. The nature of nonequivalence of the alpha hydrogens of the complex $[CpRu(PPh_3)(pms)_2]OTf$: Diastereotopic hydrogens or axial-equitorial exchange? Paul M. Nave, Mark Draganjac, Michael J. Panigot, Robert W. Curley, Jr., Charles Cottrell, 220th National Meeting, American Chemical Society, Washington, DC, August 20-24, 2000.

59. Synthesis and Characterization of a Ruthenium-thioxane Complex. Amanda Wroble, Scotty Sproles, M. Draganjac, Paul M. Nave, 85th Meeting, Ark. Acad. Sci., Conway, AR, April 13-14, 2001.

60. Synthesis of a Ruthenium-tetra(tht)dichloride Compound. Potential Precursor for Models of the Active Site of HDS over Laurite. L. A. Thornton, Jr., M. Draganjac, A. W. Cordes, 85th Meeting, Ark. Acad. Sci., Conway, AR, April 13-14, 2001.

61. Synthesis of Ruthenium Di-Mercaptan Complexes. Bradley McNew, Julie Chittenden, Amanda Wroble, Steven Franks, M. Draganjac, A. W. Cordes, 8th Annual Arkansas Undergraduate Research Conference, Arkadelphia, AR, April 20, 2001.

62. Integration of the Internet into Descriptive Inorganic Chemistry. Mark Draganjac, 223rd National Meeting, American Chemical Society, Orlando, FL, April 7-11, 2002.

63. The nature of nonequivalence of the alpha hydrogens of the complex $[CpRu(PPh_3)(pms)_2]OTf$: Diastereotopic hydrogens or axial-equitorial exchange? Paul M. Nave, Mark Draganjac, Michael J. Panigot, Robert W. Curley, Jr., Charles Cottrell, 1st Meeting, Mid-south Inorganic Chemists Association, Memphis, TN, October 5, 2002.

64. Laboratory Experiment: Synthesis and characterization of ruthenium complexes. M. Draganjac, 2nd Meeting, Mid-south Inorganic Chemists Association, Conway, AR, March 1, 2003.

65. National Chemistry Week - ASU Style. Mark Draganjac, Jeremy Lamb, Jennifer Woodruff, Casey Oliver and Student Affiliates, 225th National Meeting, American Chemical Society, New Orleans, LA, March 23-27, 2003.

66. Preliminary IR study of the Reaction of $CpRu(CO)_2^+$ with Organic Thiols. Jan Annaratone, M. Draganjac, 87th Meeting, Arkansas Academy of Science, Fayetteville, AR, April 4-5, 2003.

67. Ruthenium Mercaptan Complexes. Jan Annaratone, M. Draganjac, David Vicic, 3rd Meeting, Mid-south Inorganic Chemists Association, Fayetteville, AR, September 20, 2003.

68. Chromium-Hexadentate Bipyridyl Complexes as Photoactivators for Protein Electron Transfer. Andrea Hausman, M. Draganjac, Ryan Morgan, Bill Durham, 227th ACS National Meeting, Anaheim, CA, March 28 - April 1, 2004.

69. Spectroscopic Study of Ruthenium Mercaptan Complexes. Jan Annaratone, M. Draganjac, David Vicic, 227th ACS National Meeting, Anaheim, CA, March 28 - April 1, 2004.

PRESENTATIONS (cont'd):

70. Focus on Fund Raising - Successful Strategies at Arkansas State University. M. Draganjac, Brad Hamilton, April Adams, Angela Buckman, Angie Huett, and Student Affiliates, 227th ACS National Meeting, Anaheim, CA, March 28 - April 1, 2004.

71. Steps toward the Synthesis of Thioglycoside Dendrimers. Michael J. Panigot, Angela Buckman, Matt Whiteside, Jeremy Lamb, Andrea Hausman, Bryanna Lies, Ryan Morgan, Mark Draganjac, 227th ACS National Meeting, Anaheim, CA, March 28 - April 1, 2004.

72. Green Chemistry. M. Draganjac, Brad Hamilton, April Adams, Angela Buckman, and Student Affiliates, 88th Meeting, Arkansas Academy of Science, Jonesboro, AR, April 2-3, 2004.

73. Chromium-Hexadentate Bipyridyl Complexes as Photoactivators for Protein Electron Transfer. Andrea Hausman, M. Draganjac, Ryan Morgan, Angela Buckman, Bryanna Lies, Bill Durham, 88th Meeting, Arkansas Academy of Science, Jonesboro, AR, April 2-3, 2004.

74. Steps Toward the Preparation of Thioglycoside Dendrimers. Michael J. Panigot, Jessica Botte, Jeremy Lamb, Megan McDonald, Gayle Nichols, Valerie Orrick, Adam Pearrow, Zachary Roe, Matt Whiteside, Andrea Hausman, Angela Buckman, Bryanna Lies, Ryan Morgan, Mark Draganjac,88th Meeting, Arkansas Academy of Science, Jonesboro, AR, April 2-3, 2004.

75. Demonstration of Virtual ChemLab: Qualitative Inorganic Chemistry v1.0. M. Draganjac, 4th Meeting, Mid-south Inorganic Chemists Association, Jonesboro AR, April 3, 2004.

76. Attempted Preparation and Reactivity of [ThRu(9S3)](Otf)$_2$; Th = thiophene, 9S3 = 1,4,7-trithiacyclononane. Andrea Hausman, Mark Draganjac, NCUR Meeting, Indianapolis, IN, April14-17, 2004.

77. Chromium-Hexadentate Bipyridyl Complexes as Photoactivators for Protein Electron Transfer. Andrea Hausman, M. Draganjac, Ryan Morgan, Angela Buckman, Bryanna Lies, Bill Durham, BRIN Mentored Research Program, Little Rock, AR, June 4, 2004.

78. Steps Toward the Preparation of Glycoside and Thioglycoside Dendrimers. Michael J. Panigot, M. Draganjac, 22nd International Carbohydrate Symposium, Glasgow, Scotland, UK, July 23 - 27, 2004.

79. Synthesis and metal binding ability of thioglycoside dendrimers. M. J. Panigot, A. R. Buckman, J. Lamb, M. Whiteside, M. McDonald, Z. Roe, A. Pearrow, G. Nichols, M. Draganjac, A. Hausman, B. Lies, R. Sebourn, S. Shannon, 228th ACS National Meeting, Philadelphia, PA, August 22-26, 2004.

80. Toward the Synthesis and Metal Binding Ability of Thioglycoside Dendrimers. Michael J. Panigot, Mark Draganjac, Nisana Andersen, Audra Bowman, Jim Brands, Jessica Buck, Angela Buckman, Bradley Hyman, Sheffield Kent, Bryanna Lies, Brandon Perry, Max Rand, Randi Sebourn, Stephani Shannon, BRIN Biomedical Research Symposium, Little Rock, AR, Oct. 8, 2004.

PRESENTATIONS (cont'd):

81. Synthesis of Glycoside and Thioglycoside Dendrimers and Evaluation as Metal Chelators. Michael J. Panigot, Mark Draganjac, Audra Bowman, Randi Sebourn, Justin Yancey, Angela Buckman, Andrea Hausman, Bryanna Lies, 39th ACS Midwest Regional Meeting, Manhattan, KS, Oct. 20, 2004.

82. Glycoside Dendrimers as Detoxification Agents for Metals in Tobacco Smoke. Mark Draganjac, Michael J. Panigot, Nisana Andersen, Audra Bowman, Jim Brands, Jessica Buck, Angela Buckman, Bradley Hyman, Sheffield Kent, Bryanna Lies, Brandon Perry, Max Rand, Randi Sebourn, Stephani Shannon, Arkansas Biosciences Institute Fall Research Symposium, Oct. 28, 2004.

83. Glycoside Dendrimers as Potential Chelating Agents. M. Draganjac, Bryanna Lies, 6th Meeting, Mid-south Inorganic Chemists Association, Memphis, TN, March 5, 2005.

84. Synthesis and metal binding ability of thioglycoside dendrimers. Michael J. Panigot, Audra Bowman, Jim Brands, Jessica Buck, Nick Folts, Sheffield Kent, Max Rand, Randi Sebourn, Stephani Shannon, Mark Draganjac, Nisana Andersen, Patrick Blankenship, Bradley Hyman, Bryanna Lies, Brandon Perry, 229th ACS National Meeting, San Diego, CA, March 13 - 17, 2005.

85. Potential Chelating Agents for Heavy Metals Detoxification from ETS. Bryanna Lies, M. Draganjac, 12th Annual Arkansas Undergraduate Research Conference, Arkadelphia, AR, April 22 - 23, 2005.

86. Synthesis and Metal Binding Ability of Thioglycoside Dendrimers. M. J. Panigot, A. Bowman, J. Brands, M. Cook, L. Heard, A. Johnson, S. Kent, M. Rand, R. Sebourn, S. Shannon, B. Sheridan, H. Singletary, B. Swink, M. Draganjac, P. Blankenship, B. Lies, 39th National Organic Symposium, Salt Lake City, UT, 2005.

87. Potential chelating agents for heavy metals detoxification from ETS. Bryanna Broadaway, Mark Draganjac, Michael J. Panigot, Jim Brands, Audra Bowman, Sheffield Kent, Lynn Heard, Max Rand, Randi Sebourn, Stephani Shannon, Brandon Sheridan, 230th ACS National Meeting, Washington, D.C. August 28 - 31, 2005.

88. To PP or not to PP? Mark Draganjac. 8th Meeting, Mid-south Inorganic Chemists Association, Little Rock, AR, March 11, 2006.

89. Halloween ChemMagic Show at Arkansas State University: A new approach. Mark Draganjac, Bryanna Broadaway, Hunter Broadaway, Amanda Harvey, Teague Holmes, Sheffield Kent, Kevin Lyon, Tiffany Moss, Dean Murray, Max Rand, Carolyn Redman, Misty Thompson, Justin Yancey, 231st National ACS meeting, Atlanta, GA, March 26-28, 2006.

90. An Assessment of the Inorganic Lab Sequence at Arkansas State University. Mark Draganjac. 10th Meeting, Mid-south Inorganic Chemists Association, Springfield, MO, March 3, 2007.

PRESENTATIONS (cont'd):

91. Preliminary Investigation of the Microwave Reactions of $RuCl_3$ in DMSO. Amanda Harvey, Shengkuei Chui, Rian Snell, M. Draganjac, Ellis Benjamin. 28th University of Memphis Undergraduate Research Conference, Memphis, TN, Feb. 23, 2008.

92. October at Arkansas State University. Mark Draganjac, Shannon Hutson, Amanda Harvey, Nicole Noall, Lindy Rodery, Marinda Hutchison. 235th National ACS meeting, New Orleans, LA, April 6 - 10, 2008.

93. Pre- and post-assessment of general chemistry students. Tillman Kennon, William A. Burns, Mark Draganjac, Kelly Redeker, Carolyn Dowling, Sam Cron, Benjamin Rougeau, Mark Bryant. 235th National ACS meeting, New Orleans, LA, April 6 -10, 2008. 92.

94. MICA Inorganic Spectral Data Base. Mark Draganjac, 64th South West Regional ACS Meeting, Little Rock, AR, Oct. 1-4, 2008.

95. Microwave Synthesis of Ruthenium – DMSO Complexes. Shengkuei Chui, Amanda Harvey, Rian Snell, M. Draganjac, Ellis Benjamin. 64th South West Regional ACS Meeting, Little Rock, AR, Oct. 1-4, 2008.

96. Greener Synthesis of Ruthenium DMSO Complexes. Amanda Harvey, Shengkuei Chui, Rian Snell, M. Draganjac, Ellis Benjamin. 60th South East Regional ACS Meeting, Nashville, TN, Nov. 12-15, 2008.

97. Preliminary Thermal Studies of Ru-DMSO-Cl Complexes. Shengkuei Chui, Mark Draganjac, Les Foster, 13th Meeting, Mid-south Inorganic Chemists Association, Beebe, AR, March 7, 2009.

98. Microwave assisted synthesis of ruthenium-dmso complexes. Amanda Harvey, Shengkuei Chui, Rian Snell, M. Draganjac, Ellis Benjamin. 237th National ACS Meeting, Salt Lake City, UT, March 22-26, 2009.

99. Microwave assisted synthesis of ruthenium-dmso complexes. Amanda Harvey, Shengkuei Chui, Rian Snell, M. Draganjac, Ellis Benjamin. 93rd Meeting, Arkansas Academy of Science, Clarksville, AR, April 3-4, 2009.

100. TGA and DTA studies of selected Ru-dmso complexes. Shengkuei Chui, Mark Draganjac. 93rd Meeting, Arkansas Academy of Science, Clarksville, AR, April 3-4, 2009.

101. Nomenclature: What's in a name? Mark Draganjac. 15th Meeting, Mid-south Inorganic Chemists Association, Monticello, AR, March 13, 2010.

102. IR spectrum of NO. Tiffani Johnson, Williams Burns, Scott Reeve, Mark Draganjac. 15th Meeting, Mid-south Inorganic Chemists Association, Monticello, AR, March 13, 2010.

103. Molecular Structure of *fac*-$Ru(dmso)_3Cl_2OH_2$. Blake Reinhart, Les Foster, Jennifer Hardin, Mark Draganjac, Bruce Noll. 15th Meeting, Mid-south Inorganic Chemists Association, Monticello, AR, March 13, 2010.

PRESENTATIONS (cont'd):

104. Preliminary study of the thermally induced condensed phase electron transfer of copper chlorides with electropositive metals. Indrani Kothuru, Mark Draganjac, Les Foster, Jennifer Hardin. 15th Meeting, Mid-south Inorganic Chemists Association, Monticello, AR, March 13, 2010.

105. Molecular Structure of *fac*-$Ru(dmso)_3Cl_2OH_2$. Les Foster, Jennifer Hardin, Mark Draganjac, Bruce Noll. 94th Meeting, Arkansas Academy of Science, Little Rock, AR, April 9-10, 2010.

106. Pre- and post-assessment of general chemistry students. William Burns, Tillman Kennon, Mark Draganjac, Mike Panigot, Allyn Ontko, Hideya Koizumi, Richard Warby, Sam Cron, Ben Rougeau,

240th ACS National Meeting, Boston, MA, August 22-25, 2010.

107. Cavity Ringdown Laser Absorption Spectroscopy of Isotopically Labeled Acetylene in the 12,500 - 13,600 cm^{-1} Region: Observation of a Previously Unreported Vibrational Band. M. N. Sullivan, C.J. Lue, M. E. Draganjac, S. W. Reeve. Joint 66th South West and 62nd South East Regional ACS Meeting, New Orleans, LA, Dec. 1-4, 2010.

108. Preliminary Analysis of Thermally Induced Condensed Phase Electron Transfer Reactions of Cobalt Chloride and Cobalt Bromide with Electropositive Metals. Ragini Kamineni and Mark Draganjac. 17th Meeting, Mid-south Inorganic Chemists Association, Batesville, AR, March 12, 2011.

109. Preliminary Analysis of Thermally Induced Condensed Phase Electron Transfer Reactions of Nickel Chloride with Electropositive Metals. Rajeshwari Kamineni and Mark Draganjac. 17th Meeting, Mid-south Inorganic Chemists Association, Batesville, AR, March 12, 2011.

110. Preliminary Analysis of Thermally Induced Condensed Phase Electron Transfer Reactions of Cadmium Chloride and Lead Chloride with Electropositive Metals. Vamshi Addaguduru and Mark Draganjac. 17th Meeting, Mid-south Inorganic Chemists Association, Batesville, AR, March 12, 2011.

111. Preliminary Analysis of Thermally Induced Condensed Phase Electron Transfer Reactions of Zinc Chloride, Chromium Chloride and Lead Chloride with Electropositive Metals. Manasa Anumula and Mark Draganjac. 17th Meeting, Mid-south Inorganic Chemists Association, Batesville, AR, March 12, 2011.

112. Microwave Synthesis of CpRu(dppe)Cl. Srikanth Muthyala and Mark Draganjac. 20th Meeting, Mid-south Inorganic Chemists Association, Memphis, TN, October 20, 2012.

113. Molecular structure of $\{(\mu\text{-dtoxa})[CpRudppe]_2\}(BF_4)_2$. Jerry Clark, Srikanth Muthyala, Mark Draganjac, Michael Stone and Nikolay Gerasimchuk. 21st Meeting, Mid-south Inorganic Chemists

Association, Conway, AR, March 2, 2013.

114. DSC Analysis of the Reaction of Cu with Select Metal Halides. Kyle Fournier, Donovan Tony, David Kwangkook Jeong and Mark Draganjac. 21st Meeting, Mid-south Inorganic Chemists Association, Conway, AR, March 2, 2013.

PRESENTATIONS (cont'd):

115. Molecular structure of $\{(\mu\text{-dtoxa})[CpRudppe]_2\}(BF_4)_2$. Jerry Clark, Srikanth Muthyala, Mark Draganjac, Michael Stone and Nikolay Gerasimchuk. 97th Meeting, Arkansas Academy of Science, Little Rock, AR, April 5-6, 2013.

116. Microwave assisted synthesis of chloropentahaptocylopentadienediphenylphosphinoethane-ruthenium(II). Srikanth Muthyala and Mark Draganjac. 97th Meeting, Arkansas Academy of Science, Little Rock, AR, April 5-6, 2013.

117. Molecular Structure of $[CpRu(PPh_3)(tht)_2]Otf$. Mark Draganjac, P. M. Nave and A. W. Cordes. 97th Meeting, Arkansas Academy of Science, Little Rock, AR, April 5-6, 2013.

118. DSC Analysis of the Reaction of Cu with Select Metal Halides. Kyle Fournier, Donovan Tony, David Kwangkook Jeong and Mark Draganjac. 97th Meeting, Arkansas Academy of Science, Little Rock, AR, April 5-6, 2013.

119. Preliminary analysis of thermally induced condensed phase electron transfer (TICPET) reactions. Mark Draganjac, Sheng-Kuei Chiu, Indrani Kothuru, Vamshi Addaguduru, Manasa Anumula, Rajeshwari Kamineni, Ragini Kamineni, Les Foster, Jennifer Hardin. 245th ACS National Meeting, New Orleans, April 7, 2013.

M. S. THESIS DIRECTED:

1. Jolie Perdrix-Wang, "Synthetic Models for the Hydrodesulfurization Catalysts," 1988.

2. David Minick, "Reactions of $[CpRu(PPh_3)_2]^+$ with Weak Sulfur Donor Ligands," 1991.
3. Colin Hester, "Novel Organometallic Dithiooxalate Compounds: Synthesis and Structure," 1993.
4. Haengsoon Park, "Infrared Spectra of Ruthenium Mercaptan Complexes in the S-H Stretching and the Crystal and Molecular Structure of $[CpRu(PPh_3)_2(C_6H_5CH_2CH_2SH)]BF_4 \cdot CH_2Cl_2$," 1993.
5. Tanya Hagler, "Synthetic Models for Multi-metal Catalyst Systems," 1993.
6. Randy Teitloff, "Single Phase Models for Hydrodesulfurization Catalysts," 1994.
7. C. E. Gerdes, "Structural and Functional Models for the Active Site of the [Ni/Fe] Hydrogenase Enzyme," 1996.
8. Lisa Gilbreath, "The Characterization of Copper Complexes of Polyoxoanions Containing Arsenic, Selenium, and Tellurium," 1996.
9. Yanjing Jiang, "Effect of Ligand Bulk on C-S Bond Cleavage Reaction of $CpRu(PPh_3)_2^+$ with Sulfur Donor Ligands," 1996.
10. Ben Rougeau, "Thermal Decomposition Studies of Selected Transition Metal Polysulfide Complexes," 1997.
11. Chohan Muhammed, "Synthetic and Computational Models for the Active Site of [Ni/Fe]Hydrogenase Enzymes," 1997.
12. Jan Annaratone, “Spectroscopic Study of Ruthenium-Mercaptan Complexes,” 2004.
13. Shengkuei Chui, “Microwave Synthesis and Thermal Analysis of Ru-DMSO Complexes”, 2009.
14. Melissa Arnold, "The Effect of Active Techniques Combined with Didactic Lecture on Student Achievement", 2009. (co-advisor)
15. Indrani Kothuru, “Preliminary Analysis of Thermally Induced Condensed Phase Electron Transfer Reactions of Copper Chloride with Electropositive Metals”, 2010.

M. S. THESIS DIRECTED (cont'd):

16. Rajeshwari Kamineni, “Preliminary Analysis of Thermally Induced Condensed Phase Electron Transfer Reactions of Nickel Chloride with Electropositive Metals”, 2010.
17. Vamshi Addaguduru, “Preliminary Analysis of Thermally Induced Condensed Phase Electron Transfer Reactions of Cadmium Chloride and Lead Chloride with Electropositive Metals”, 2010.
18. Manasa Anumula, “Preliminary Analysis of Thermally Induced Condensed Phase Electron

Transfer Reactions of Zinc Chloride, Chromium Chloride and Lead Chloride with Electropositive Metals", 2010.

19. Ragini Kamineni, "Preliminary Analysis of Thermally Induced Condensed Phase Electron Transfer Reactions of Cobalt Chloride and Cobalt Bromide with Electropositive Metals", 2011.
20. Adam Reinhart, "Select Ruthenium Complexes as Potential Candidates for Thiol Ligation", 2011.
21. Les Foster, "Investigation of Select Ruthenium Compounds as HDS Catalyst Models", 2011.
22. Srikanth Muthyala, "TBA", 2013.

UNDERGRADUATE HONORS THESIS DIRECTED:

1. Amanda Wroble, "Novel Organometallic Ruthenium-Sulfur Complexes: Synthesis of Thioxane and Di-Mercaptan Complexes", 2001.

GRANT PROPOSALS FUNDED: (total funds include A.S.U. match where applicable)

1. Arkansas State University Faculty Research Committee (1986), "The Synthesis of Ruthenium Polysulfide Complexes," $5,982.

2. ACS Petroleum Research Fund (1987), "Synthetic Models for the Hydrodesulfurization Catalysts," $21,736.

3. Arkansas State University Competitive Applied Research Fund (1987), "The Development of New Coal Desulfurization Strategies," $3,498.

4. ACS Project SEED, (1987), $1,000.

5. Arkansas State University Faculty Research Committee (1988), "Copper Complexes of Polyoxoanions," $3,689

6. ACS Project SEED, (1988), $1,000.

7. ACS Project SEED, (1990), $1,000.

8. Nathan Deutsch Faculty Development Fund (1990), "Novel Organometallic Complexes with 1,2-Dithio-containing Ligands," $447.

9. Arkansas Science and Technology Authority (1990), "Novel Organometallic Dithiooxalate Complexes," $74,360.

GRANT PROPOSALS FUNDED: (cont'd):

10. Arkansas DOE/ASTA EPSCoR Graduate Student Training Grant Program (1992), "Synthetic Models for Multi-metal Catalyst Systems," $25,000.

11. Arkansas DOE/ASTA EPSCoR Graduate Student Training Grant Program (1993), "Synthetic Models for Multi-metal Catalyst Systems," $10,416.

12. Nathan Deutsch Faculty Development Fund (1993), "Reaction of $CpMCl_x$ (M = Rh, Ir, x = 2; M = Ti, Zr, Hf, x = 3; M = Nb, Ta, x = 4) with Dithiooxalate," $370.

13. National Science Foundation (ILI, Co-PI, 1993), "Laboratory Improvement for Environmental Chemistry," $126,406.

14. Arkansas State University Academic Computing Advisory Committee (1995), Cambridge Soft Corporation Chem3D Pro for Windows, $299.

15. Arkansas State University, College of Arts and Sciences, Dean's Research Award (1999), $282.50.

16. Silo Advisory Council Undergraduate Research Fellowship (1999), "The Reaction of $CpRu(PPh_3)_2^+$ with Potentially Chelating Heterocycles," $3797.

17. Arkansas State University, College of Arts and Sciences, Dean's Research Award (2000), $128.00.

18. Silo Advisory Council Undergraduate Research Fellowship (2000), "Synthesis of Ruthenium Di-Mercaptan Complexes: Selective Oxidation of Coordinated Thiols," $2650.

19. Arkansas State University, College of Arts and Sciences, Dean's Research Award (2000), $400.00.

20. Arkansas State University, College of Arts and Sciences, Dean's Research Award (2002), $400.00.

21. American Chemical Society, National Meeting Travel Grant (2003), $150.00

22. Nathan Duetsch Faculty Development Fund, (2003), "Reaction of $CpRu(CO)_2^+$ and $CpRu(PPh_3)CO^+$ with Mercaptan Ligands", $466.90.

23. Arkansas BRIN Fellowship (2003), "Chromium Complexes with Hexadentate Bipyridyl Ligands," $16700.

24. Arkansas Biosciences Institute (Co-PI, 2004), "Glycoside Dendrimers as Detoxification Agents for Metals in Tobacco Smoke", $75000.

25. American Chemical Society, National Meeting Travel Grant (2004), $200.00.

GRANT PROPOSALS FUNDED: (cont'd):

26. Silo Advisory Council Undergraduate Research Fellowship (2004), "Potential Chelating Agents for Heavy Metals Detoxification from ETS," $2900.

27. NSF, MRI (Co-PI, 2011), “Acquisition of a DSC (Differential Scanning Calorimetry) System for R&D at CESUR (Center for Efficient and Sustainable Use of Resources) of Arkansas State University”, $138,288.

REVIEWS:

Books:

Descriptive Inorganic Chemistry, 2nd Ed., Rayner-Canham

General Chemistry, 6th Ed., Whitten, Davis and Peck

Chemistry, The Molecular Nature of Matter and Change, 3rd Ed., Silberberg

Journals:

8 papers for Proc. Ark. Acad. Sci., 6 papers for J. Ark. Acad. Sci., 7 papers for J. Chem. Cryst., 16 papers for Synthesis and Reactivity in Inorg. and Metal-Organic Chemistry; 1 paper for Organometallics; 1 paper for Journal of Solid State Chemistry;

Proposals:

3 proposals for the National Science Foundation; 8 proposals for the Petroleum Research Fund

OTHER:

Academy of Young Scholars, supervisor of students/ experiments, 1990

Upward Bound, supervised one student in research, 1990

Infography Subject Specialist - Transition Metal Complexes containing sulfur-based ligands (2000)

BeyondBooks - website linked (2000)

Have prepared over 400 web pages for teaching

77 students participated in research, 21 completing Masters of Science degrees. Served on 9 MS students thesis committees and 1 Ph.D. dissertation committee (University of Memphis).

Student Awards:

1. Andy Thornton, Honorable Mention, Undergraduate Physical Science, 85th Arkansas Academy of Science
2. Jan Annaratone, Second Place, Graduate Physical Science, 87th Arkansas Academy of Science

3. Andrea Hausman, First Place, Undergraduate Physical Science, 88th Arkansas Academy of Science
4. Amanda Harvey, First Place, Undergraduate Physical Science poster, 93rd Arkansas Academy of Science

Kaylynne M. Glover

408 Wilkins Avenue
Jonesboro, AR 72401
501- 620-9833
kmglover@astate.edu
kaylynnemglover@hotmail.com

EDUCATION

Master of Arts, Biology **8/2008 – 8/2010**
Arkansas State University, Jonesboro, AR
GPA 3.8720
Major: The Role of Color and Color Vision on the Evolution of Primates
Minor: The Design of a Marine Mammal Exhibit Meeting State Frameworks

Bachelor of Science Education, Life/Earth Science **8/2003 -- 5/2007**
University of Central Arkansas, Conway, AR
Summa cum Laude, GPA 3.965
Passed Praxis II Exam (Biology, Earth Science) Fall 2006, ETS Recognition of Excellence for Biology
Passed Praxis II Exam (Physical Science) Summer 2008

HONORS

Academic

ETS Recognition of Excellence (Biology: Content Knowledge), 2006
Academic Excellence, 2005, UCA Housing and Residence Life
State Chemistry Olympiad Finalist, 2005, Qualified for Nationals
Valedictorian, Lake Hamilton High School, 2003, GPA 4.167, ACT 32
National Honors Society, 2001-2003

UNIVERSITY ADVISING EXPERIENCE

Pre-Professional Advisor, **Fall 2010-Current**
Biological Science and Chemistry and Physics Departments

Duties include meeting with and planning schedules for students who plan on entering a science-based professional school including medical, dental, pharmacy, veterinary, optometry, occupational therapy, physical therapy, dental hygiene, chiropractic, and physician assistant. Includes making customized four-year-plans, monitoring GPAs, course loads, prerequisites and deadlines, writing letters of recommendation, reviewing personal statements, teaching seminars, helping them prepare for qualifying exams, and organizing New Student Orientations.

UNIVERSITY TEACHING EXPERIENCE

FACULTY/STAFF

Arkansas State University, Biology and Chemistry Departments
"First-Year Experience"/"Making Connections" **Fall 2011, Fall 2012**

A course designed to help students prepare for all aspects of college life (academic, emotional, physical, financial, psychological, and emotional). Discuss potential career paths, methods of improving academic performance, and available campus programs, organizations, and institutions. Teach them the content and skills necessary to do well in a science major including Latin and Greek root words, writing lab reports and research papers, and the Nature of Science.

GRADUATE/TEACHING ASSISTANT

Arkansas State University, Biology Department

TA duties primarily include knowledge of material, PowerPoint and lesson writing, laboratory set up, lab equipment maintenance, assisting students as they learn the material, quiz and test writing and grading (with modification for students with disabilities), accurate record keeping, and building professional and respectable relationships with students and teachers.

Human Anatomy and Physiology I Lab *Summer 2009 – Summer 2010*
Teach basic anatomy and physiology, approximately 36 students per lab for 5 labs.

Human Anatomy and Physiology II Lab *Spring 2010-Summer 2010*
Teach basic anatomy and physiology, approximately 36 students per lab for 4 labs.

Human Structure and Function I Lab *Spring 2010*
Teach advanced anatomy and physiology, approximately 20 students per lab for 1 lab.

Human Structure and Function II Lab *Fall 2010*
Assist IOR, approximately 20 students per lab for 1 lab.

Biology of the Cell Lab *Fall 2009*
Teach appropriate material and laboratory techniques, approximately 25 students per lab for 1 lab.

Histology Lab *Spring 2008*
Assist IOR, approximately 10 students per lab for 1 lab.

Microbiology for Nursing and Allied Health Lab *Spring 2008*
Assist IOR and teach appropriate material, approximately 36 students per lab for 1 lab.

Animal Physiology Lab *Spring 2008*
Teach appropriate material and laboratory techniques, approximately 15 students per lab for 1 lab.

ADDITIONAL RELEVANT TEACHING EXPERIENCE

Mayflower High School, Science Department

Duties include knowledge of material, PowerPoint and lesson writing, laboratory set up, lab equipment maintenance, assisting students as they learn the material, quiz and test writing and grading (with modification for students with disabilities and for those with advanced skills, i.e. gifted and talented), accurate record keeping (grades, parent and student communication, and special education students documentation), building professional and respectable relationships with students and teachers, professional development, and curricula development.

Biology, 10th grade *2007-2008*
Teach biology, modified for students ranging from severely learning disabled to gifted and talented, for 4 classes (one inclusion), approximately 25 students per class.

Environmental Science, 9th-12th grade *2007-2008*
Teach environmental science, modified for students ranging from severely learning disabled to gifted and talented for 1 class with approximately 20 students.

Astronomy, 11th-12th grade *2007-2008*
Teach astronomy, modified for students ranging from severely learning disabled to gifted and talented for 1 class with approximately 30 students.

ALE ("Alternative Learning Environment") Science, 7th-12th grade *2007-2008*
Teach basic science appropriate for 10 students of a wide age range and of all skill and disability levels with emotional and behavioral instabilities and, due to legal reasons, are unable to associate with other students, with a strong emphasis on creative lesson and lab planning (with an emphasis on "real world" problems), counseling, and anger management.

Little Rock Central High School, Biology Department

Duties include knowledge of material, lesson writing, laboratory set up, lab equipment maintenance, assisting students as they learn the material, quiz and test writing and grading (with modification for students with disabilities), accurate record keeping (grades, parent and student communication, and special education students documentation), building professional and respectable relationships with students and teachers, professional development, curricula development, and aid in science fair participation and development.

Pre-AP Biology, 10th grade *Spring 2007*
Teach advanced biology approximately 26 students per class for 4 classes.

Biological Research Class, 9th-12th grade *Spring 2007*
Aid students in learning about the scientific method and research development with a specific emphasis on research design and presentation (including PowerPoint

development) in preparation for State, National, and International Science Fairs, approximately 15 students per class for 1 class.

SELECTED WORK AND PRACTICUM EXPERIENCE

TA for Arkansas State University **1/2009 – 7/2010**
Microbiology for Nursing and Allied Health Lab, Histology Lab, Animal Physiology Lab, Anatomy and Physiology I Lab (5 classes), Anatomy and Physiology II Lab (3 classes), Biology of the Cell Lab, Human Structure and Function I Lab, Human Structure and Function II Lab

Science Teacher **2007-2008**
Mayflower High School, 29 Lesley King Drive, Mayflower, AR 72106
Biology, Inclusion Biology, Astronomy, Environmental Science, and ALE Science

Student Teaching **Spring 2007**
Little Rock Central High School, 1500 S. Park St. Little Rock, AR 72202
Pre-AP Biology, 10^{th} grade, and a multi-level Research class
Helped organize local Science Fair

Practicum
Conway High School East, Conway, AR, Fall 2006 (Internship I)
Conway High School East, Conway, AR, Spring 2006
Conway High School East, Conway, AR, Fall 2005

Color Guard Instructor **2005-Present**
Piggott, Westside, Mayflower, Marshall, and Blytheville High Schools

Server and Hostess **3/2005 – 7/2007**
Smokehouse BBQ, Conway, AR 72034

Secretary **5/2004 – 8/2004**
AirTech Supply, Inc., Hot Springs, AR 71913

NON-PEER REVIEWED PUBLICATIONS

Romero, A. & K. Glover. 2008. ASU students study unusual cause of sea otter's death. *The Jonesboro Sun* **105**(293):A8. 9 October 2008.

PROFESSIONAL DEVELOPMENT AND INVOLVEMENT

National Association for Advisors in the Health Professions Member	December 2011-Current
Attended Bi-Annual National Convention in Baltimore, MD	*Summer 2012*
Course Evaluation Committee, Arkansas State University	Summer 2011-Current
Chair Elect	*Summer 2012-Current*
Recruitment Committee, Arkansas State University	Summer 2011-Current
Curriculum Committee, Arkansas State University	Summer 2011-Current
Assessment Committee, Arkansas State University	Summer 2011-Current
Assessment Committee, Arkansas State University, Student Rep	Fall 2009-Spring 2010
ALE Training Seminar	Fall 2007

VOLUNTEER EXPERIENCE

Notus Independent Winterguard Director **2012-2013**
Organize, design, choreograph, and instruct a non-profit performing arts group.

Nursery Leader **1/12-2/13**
Teach and take care of children

Church Librarian **3/11-1/12**
Maintain materials and equipment for checkout, make copies as needed

Primary Chorister **1/06-6/06, 5/09-3/11**
Teach children to sing ages 2-12

Activities Chair **6/06-6/08**
Plan an organize all church-wide activities (1 per month)

Tau Beta Sigma, National Honorary Band Sorority, Treasurer **2006-2007**
Plan and implement fundraising events, manage money of organization.

Youth Advisor **8/05-1/06**
Work with female youth ages 12-18

Sunday School Teacher **1/05-8/05**
Teach basic gospel doctrine to youth ages 12-13

Church Camp Counselor **Summers 2001-2003**
Worked with female youth ages 12-16

CREDENTIALS AND REFERENCE LETTERS

University of Central Arkansas Career Services Office
Conway, AR 72035 (501-450-3143)

Anahita Izadyar, Ph. D.

Department of Chemistry and physics, Arkansas state university
Phone:(870)680-2480
Email: aizadyar@astate.edu

Education

- (2002–2008) Ph.D. in Analytical Chemistry and Electrochemistry: Shiraz University of Iran, Thesis: "Carbon composite coated wire electrode for detection of silver, chromium and lead. Study and complete analysis of Shiraz petroleum refinery wastewater" (Advisor: Professor Abdolkarim Abbaspour).
- (1998–2000) M.S. in Analytical Chemistry: Shiraz University of Iran (Advisor: Professor Abdolkarim Abbaspour).
- (1990–-1994) B.S. in Chemistry: Shiraz University of Iran

Professional Experience

- (August 2012- present) Assistant Professor of chemistry: Department of Chemistry and physics; Arkansas state university
  (October 2009–April 2012) Postdoctoral fellow: Department of Chemistry, University of Pittsburgh (Advisor: Professor Shigeru Amemiya).
- Developed new electrochemical method by using scanning electrochemical microscopy to study diffusion pathway of the nuclear pore complex in isolated *Xenopus laevis* oocyte nuclei.
- Determination of kinetic parameters for facilitated ion transfer at liquid/liquid interface.
- Investigating electrochemical mechanism of ion–ionophore recognition at plasticized polymer membrane/water interfaces.
- Stripping voltammetry of nanomolar perchlorate using polymer-modified pencil-lead electrodes.

- (2006–-2008) Visiting scholar: Center for Electrochemistry, Department of Chemistry and Biochemistry, University of Texas at Austin (Advisor: Professor Allen J. Bard). Investigation in electrochemistry, spectroscopy and ECL behavior of quinoxaline derivatives.

  (2002–2008) Chemistry Department, Shiraz University of Iran Developed and fabricated ion-selective electrodes for novel applications in potentiometry.
- Industrial experience in wastewater management in oil/water analytical chemistry in petroleum refinery of Iran and data interpretation including ASTM/EPA methods for petroleum hydrocarbons and water chemistry.

Affiliation

- American Chemical Society

Selected Publications

1. **Anahita Izadyar**, Jiyeon Kim, , and Shigeru Amemiya, Microscope Mechanism of Molecular Transport through the Nuclear Pore Complex as Studied using Micropipette by Scanning Electrochemical Microscopy, under preparation.
2. Shigeru Amemiya, Jiyeon Kim, **Anahita Izadyar**, Benjamin Kabagambe, Mei Shen, Ryoichi Ishimatsu, Electrochemical Sensing and Imaging Based on Ion Transfer at Liquid/Liquid Interfaces, Submitted to Electrochimica Acta.
3. Jiyeon Kim, **Anahita Izadyar**, Nikoloz Nioradze, and Shigeru Amemiya, Nanoscale Mechanism of Molecular Transport through the Nuclear Pore Complex as Studied by Scanning Electrochemical Microscopy, J. Am. Chem. Soc., **DOI:** 10.1021/ja311080j
4. Benjamin B Kabagambe, **Anahita A Izadyar**, and Shigeru S Amemiya, Stripping voltammetry of nanomolar potassium and ammonium ions using a valinomycin-doped double-polymer electrode.Anal Chem 84 (2012),7979-86.
5. **Anahita Izadyar**, Yushin Kim, Michelle M. Ward Muscatello, and Shigeru Amemiya, "Double-Polymer-Modified Pencil Lead for Stripping Voltammetry of Perchlorate in Drinking Water" J. Chem. Educ. 89 (2012), 1323–1326.
6. Ryoichi Ishimatsu, **Anahita Izadyar**, Benjamin Kabagambe, Yushin Kim, Jiyeon Kim, and Shigeru Amemiya, "Electrochemical Mechanism of Ion–Ionophore Recognition at Plasticized Polymer Membrane/Water Interfaces" J. Am. Chem. Soc., 133 (2011), 16300–16308.
7. **Anahita Izadyar**, Shiuh-Tzung Liu, Pi-Tai Chou, and Allen J. Bard, "Electrogenerated Chemiluminescence (ECL) of 2-Oxa-bicyclo [3.3.0] octa-4,8-diene-3,6-dione (OBDD)" J. Electroanal. Chem. 635 (2009) 7–12.
8. **Anahita Izadyar**, Khalid M. Omer, Yunqi Liu, Shiyan Chen, Xinjun Xu, and Allen J. Bard, "Electrochemistry and Electrogenerated Chemiluminescence of Quinoxaline Derivatives" J. Phys. Chem. C 112 (2008), 50, 20027–20032.
9. Abdolkarim Abbaspour and **Anahita Izadyar**, "Platinum Coated Electrode Based on Bentonite Carbon Composite for Lead Detection as an Environmental Sensor" Talanta 71 (2007) 887–892.
10. Abdolkarim Abbaspour and **Anahita Izadyar**, "Multi Wall Carbon Nanotube Composite Coated Platinum Electrode as a Sensitive Sensor for Detection of Cr (III) in Natural Waters" Anal. Bioanal. Chem. 386 (2006) 1559–1565.
11. Abdolkarim Abbaspour **Anahita Izadyar**, and Hashem Shargei, "Carbon Composition PVC Based Membrane in a Highly Selective and Sensitive Coated Wire Electrode for Silver Ion" Anal. Chim. Acta. 525 (2004) 91–96.
12. Abdolkarim Abbaspour and **Anahita Izadyar**, "Chromium (III) Ion Selective Electrode Based on Dimethylamin Azobenzene." Talanta, 53 (2001) 1009–1013.
13. Abdolkarim Abbaspour and **Anahita Izadyar**, "Highly Selective Electrode for Nickel (II) Ion Based on 1-5 Diphenylthiocarbazon ," Microchem. J. 69 (2001) 7–11.

Standard CV

James Tillman Kennon

Associate Professor of Science Education
(870)972-3256
jkennon@astate.edu

Current Position

Position Title: Associate Professor of Science Education
Current Academic Rank: Associate Professor
Rank Since: Fall 2008

Degrees

EDD Science Education/Instruction and Curriculum Leadership: , University of Memphis, Memphis, TN 2002
Dissertation: A Study of the Levels of Understanding of Physical Science Concepts of K-8 Preservice and Inservice Teachers

MSE Biology: Education, Arkansas State University, Jonesboro, AR 1992

BSE Biology: education, Arkansas State University, Jonesboro, AR 1991

BS Zoology: , Arkansas State University, Jonesboro, AR 1972

Professional Licensures & Certifications

Arkansas Teacher Licensure, Arkansas Department of Education 2016
Amateur Radio License, Federal Communications Commission 2016

Honors and Awards

Achievement Award for Service, Arkansas State University, College of Sciences and Mathematics 2009

Work Experience

2001 - Present Associate Professor, Arkansas State University, State University, Arkansas

1988 - 2001 Science Teacher, Cross County School District

Membership

Association of Science Teacher Education - Present
Astronomical Society of the Pacific - Present
National Association of Biology Teachers - Present

National Science Teachers Association - Present
American Chemical Society 2009 - Present

Teaching

Fall 2006 Courses:

EDSC 4593 001 - Methods and Materials Teaching Science in the Secondary School
EDSC 5593 1 - METH MAT TEACH SCI SEC SCHOOL
GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
TIBI 4826 001 - Biology Teaching Internship in the Secondary School
TICH 4826 001 - Chemistry Teaching Internship in the Secondary School

Spring 2007 Courses:

GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
TIBI 4826 001 - Biology Teaching Internship in the Secondary School
TICH 5826 1 - CHEM TEACH INTERN SECONDARY
TIPH 5826 1 - PHYSICS TEACH INTERN SECONDARY

Summer 2007 Courses:

GSP 3203 001 - Science for Teachers
GSP 3203 1 - SCIENCE IN ELEM CLASSROOM
GSP 5973 1 - SUMMER SCIENCE ACADEMY
GSP 5983 1 - SPACE SCIENCE AND MATH

Fall 2007 Courses:

EDSC 4593 001 - Methods and Materials Teaching Science in the Secondary School
EDSC 5593 1 - METH MAT TEACH SCI SEC SCHOOL
GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers

Spring 2008 Courses:

GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
PHYS 4913 1 - ATMOSPHERIC DYNAMICS

Summer 2008 Courses:

GSP 3203 001 - Science for Teachers

Fall 2008 Courses:

EDSC 4593 001 - Methods and Materials Teaching Science in the Secondary School
EDSC 5593 1 - METH MAT TEACH SCI SEC SCHOOL
GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers

TIBI 5826 1 - BIOLOGY TEACH INTERN SECONDARY

Spring 2009 Courses:

GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
PHYS 459V 001 - Research in Physics
PHYS 4913 1 - ATMOSPHERIC DYNAMICS
TIBI 4826 001 - Biology Teaching Internship in the Secondary School
TICH 4826 001 - Chemistry Teaching Internship in the Secondary School

Summer 2009 Courses:

GSP 3203 001 - Science for Teachers
GSP 3203 010 - Science for Teachers

Fall 2009 Courses:

EDSC 4593 001 - Methods and Materials Teaching Science in the Secondary School
EDSC 5593 1 - METH MAT TEACH SCI SEC SCHOOL
GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
TIBI 4826 001 - Biology Teaching Internship in the Secondary School
TICH 4826 001 - Chemistry Teaching Internship in the Secondary School

Spring 2010 Courses:

CHEM 4393 002 - Special Problems
GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
GSP 3203 008 - Science for Teachers
PHYS 3043 001 - ATMOSPHERIC DYNAMICS
PHYS 4693 001 - Research in Physics-Capstone
TIBI 4826 001 - Biology Teaching Internship in the Secondary School
TIBI 5826 1 - BIOLOGY TEACH INTERN SECONDARY

Summer 2010 Courses:

GSP 3203 001 - Science for Teachers
GSP 3203 008 - Science for Teachers

Fall 2010 Courses:

EDSC 4593 001 - Methods and Materials Teaching Science in the Secondary School
GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
PHYS 459V 001 - Research in Physics
TIBI 5826 1 - BIOLOGY TEACH INTERN SECONDARY
TICH 5826 1 - CHEM TEACH INTERN SECONDARY

Spring 2011 Courses:

GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
PHYS 3043 001 - ATMOSPHERIC DYNAMICS
TIBI 4826 001 - Biology Teaching Internship in the Secondary School
TIPH 4826 001 - Physics Teaching Internship in the Secondary School

Summer 2011 Courses:

GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers

Fall 2011 Courses:

EDSC 4593 001 - Methods and Materials Teaching Science in the Secondary School
EDSC 5593 1 - METH MAT TEACH SCI SEC SCHOOL
GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
TIBI 4826 001 - Biology Teaching Internship in the Secondary School
TICH 4826 001 - Chemistry Teaching Internship in the Secondary School

Spring 2012 Courses:

CHEM 1003 001 - Introduction to Chemistry
GSP 3203 001 - Science for Teachers
GSP 3203 002 - Science for Teachers
PHYS 3043 001 - Atmospheric Dynamics
TICH 4825 001 - Chemistry Teaching Internship in the Secondary School

Summer 2012 Courses:

GSP 3203 002 - Science for Teachers
GSP 3203 009 - Science for Teachers

Fall 2012 Courses:

EDSC 4593 001 - MET MAT TECH SCIENCE 2ND SCH
GSP 3203 001 - SCIENCE FOR TEACHERS
GSP 3203 002 - SCIENCE FOR TEACHERS
TIBI 4826 001 - BIOL TEACH INTERN SECONDARY
TICH 5826 001 - CHEM TEACH INTERN SECONDARY

Advising Load

Spring 2012: 14

Fall 2009: 14

Summer 2009: 14

Spring 2009: 14

Fall 2008: 10

Summer 2008: 10

Spring 2008: 10

Fall 2007: 10

Spring 2006: 0

Student Mentoring

Atmospheric Research , Kristen Collins Fall 2012 - Present

Kristen is working in an ASGC funded research project that I am the PI on titled: “Collection /Analyses of Upper Atmosphere UV Radiation".

Internship Supervisor, Chemistry and Physics Department , Osler, Aja S. Fall 2012
Atmospheric Research , Bryant Fong Fall 2012 - Present

Bryant is working in an ASGC funded research project that I am the PI on titled: “Collection /Analyses of Upper Atmosphere UV Radiation".

Master's Thesis Committe Member , Granville L. Vaughan Fall 2012 - Present
Internship Supervisor, Biological Sciences Department , Penn, Kellye R. Fall 2012
Internship Supervisor, Biological Sciences Department , Gist, Brittany S. Fall 2012
Internship Supervisor, Biological Sciences Department , Bagwell, Lina I. Fall 2012
Internship Sjupervisor, Chemistry and Physics Department , Hanson, Robbyn D. Spring 2012
Honors Thesis Committee Member , Hannah Wright Spring 2012 - Present

Scholarly Contributions and Creative Productions

Grants
Completed/Published
Risch, T., McKay, T., Kennon, J.T., Yanowitz, K., Grippo, R., & Pearce, A. (2012). *Fishing for STEM*. National Science Foundation – $139,099 (not funded).

Kennon, J.T., & Grady, J. (2012). *Weaving Together Science & Common Core Mathematics & Literacy Through Problem-based Learning*. NCLB (funded).

Kennon, J.T., & Huang, A. (2011). *Balloon SAT M-T 11-12*. Arkansas Space Grant Consortium - $4953 (funded).

Kennon, J.T., & Ali, H. (2010). *Atmospheric Aerosol/Radiation*. Arkansas Space Grant Consortium – $11,365 (funded).

Green, V.S., Hannigan, R., Christian, A., Kennon, J.T., & Gilbert, E. (2008). Sencer Institute - $3000 (funded).

Kennon, J.T., & Huang, A. (2008). *BalloonSAT-based Mirco Thruster Flight Tests*. Arkansas Space Grant Consortium – $29,644.2 (funded).

Kennon, J.T. (2008). *BalloonSAT/Heat Islands*. Arkansas Space Grant Consortium – $14,279.

Christian, A., Hannigan, R., Grippo, A., Kennon, J.T., Miller, C., & Hall, J. (2008-2013). *GK12: Environmental Sciences and Molecular Biosciences in the Natural State*. Arkansas State University - $2,242,565 (funded).

Pratte, J.M., Kennon, J.T., Green, V.S., Bouldin, J., & Gilbert, E. (2008). *SENCER Implementation Grant*. SENCER – $3000 (funded).

Kennon, J.T. (2007). *BalloonSAT*. Arkansas Space Grant Consortium - $17,714 (funded).

Kennon, J.T. (2007). *Funds for NSTA Boston BalloonSAT & CricketSAT Presentation*. Arkansas Space Grant Consortium - $1553.08 (funded).

Kennon, J.T. (2007). *Funds for Texas Star Party BalloonSAT & CricketSAT Presentation*. Arkansas Space Grant Consortium - $1061 (funded).

Kennon, J.T., Trautwein, J., & Ross, C.A. (2007-2010). *No Child Left Behind Mathematics and Science Partnership Grant, Mississippi County Science Academy*. U.S. Department of Education and ADE – $120,948 (funded).

Kennon, J.T., Trautwein, J., & Ross, C.A. (2006-09). *No Child Left Behind Mathematics and Science Partnership Grant, Mississippi County Science Academy*. US Department of Education and ADE – $100,428 funded.

In Progress

Kennon, J.T. (2012). *Collection/Analyses of Upper Atmosphere UV Radiation*. Arkansas Space Grant Consortium - $3864.00 (funded).

Kennon, J.T., Garber, L., Fuller, T., Ross, C.A., Bennett, B., Grippo, A., & Lambertus, A. (2012). *Delivering Excellence in Learning Through Active STEM (DELTA-STEM)*. National Science Foundation – $726,831 (not funded).

Kennon, J.T. (2012). *University Balloon Program*. Arkansas Space Grant Consortium - 10,000.00 (funded).

Grippo, A., Kennon, J.T., Hall, J., Engelken, R., Yanowitz, K., & Trautwein, J. (2009-2014). *Creating STEM Teachers for Arkansas' Future*. NSF – $899,988 (funded).

Bouldin, J., Grippo, A., Kennon, J.T., Miller, C.A., & Hall, J. (2008-2013). *GK12: Environmental Sciences and Molecular Biosciences in the Natural State.*. NSF Division of Graduate Education – $2,242,556 (funded).

Journal Publications

Completed/Published

Kennon, J.T., Vaughn, G.C., Grippo, A., & Bouldin, J. (2012). Simple Toxicity Testing Utilizing Daphnia spp. and Table Salt. *Science Scope,* 36(8), 74-82.

Johnson, R., & Kennon, J.T. (2009). Teaching population genetics and evolution in the biology classroom using Drosophila.. *Journal of College Science Teaching, 38,* 18-23.

Kennon, J.T. (2009). Teaching population genetics and evolution in the biology classroom using Drosophila.. *Journal of College Science Teaching, 38,* 18-23.

Kennon, J.T., Roberts, E., & Fuller, T.K. (2008). Students at the Edge of Space. *The Science Teacher, 75*(1), 36-43.

Kennon, J.T., & Ross, C.A. (2007). Recycling aluminum cans in the lab: two inexpensive inquiry activities. *Science Scope, 30*(6), 5.

Presentations

Completed/Published

Kennon, J.T., & Roberts, E. (2012). Arkansas BalloonSAT: Outreach and Research. 2012 Fall Southeast Regional Space Grant Meeting. http://national.spacegrant.org/archives.html

Kennon, J.T., & Rogers, D. (2012). Common Core: What Are the Implications for Science Teachers? Common Core Conference at ASU.

Ali, H., Kennon, J.T., & Patterson, A. (2012). Design of an aerosol generation and reaction apparatus. 20th Annual ASGC symposium.

Kennon, J.T., Hall, J., Bouldin, J.L., & Miller, C. (2012). Environmental Science Activities for Middle Grades Classrooms. Arkansas Curriculum Conference.

Grippo, R., Risch, T., & Johnson, R. (2012). NATIONAL SCIENCE FOUNDATION PROPOSED PROJECT: FISHING FOR STEM LITERACY INFORMAL SCIENCE EDUCATION INITIATIVE. Annual Meeting of Mid-South SEATC.

Kennon, J.T., & Roberts, E. (2012). Taking the Temperature of the Atmosphere. Arkansas Curriculum Conference.

Kennon, J.T., & Popejoy, R. (2012). Teacher Education Math and Science. College of Education Future Teacher's Day.

Ali, H., & Kennon, J.T. (2012). Water vapor and climate change. Dept of Chemistry Seminar.

Kennon, J.T., & Roberts, E. (2012). Will it Float? Density. Arkansas Curriculum Conference.

Kennon, J.T., Grippo, A., Hall, J., Freeman-Nelson, K., Earhart, A., & Collins, C. (2011). A Fun Real-World Experiment Testing Different Sunscreens. Arkansas Curriculum Conference.

Kennon, J.T., Bennett, B., Ali, H., & Roberts, E. (2011). Arkansas BalloonSAT Project: Year IV. Arkansas Space Grant Symposium.

Bouldin, J., Yanowitz, K.L., Miller, C.A., Grippo, A., & Kennon, J.T. (2011). Arkansas State University graduate student enhance communication skills and science education in the Arkansas Delta. NSF GK12 Annual Meeting.

Kennon, J.T., Ali, H., & Pratte, J.M. (2011). Atmospheric Dynamics: Students at the Edge of Space. SENCER Summer Institute 2011.

Ali, H., & Kennon, J.T. (2011). ATR-FTIR investigation on the DRH of mixed binary salts of atamospheric importance. Conference on Undergraduate Research.

Kennon, J.T., Ali, H., Huss, M., Bennett, B., & Roberts, E. (2011). BalloonSat/Near Space Research. 2011 Arkansas NASA EPSCoR Workshop.

Grippo, A., Kennon, J.T., Hall, J., Engelken, R., Yanowitz, K., & Bouldin, J. (2011). Creating STEM Teachers for Arkansas' Future by Designing an Environmental Science Outreach Activity. Mid-South SETAC Regional Meeting.

Bouldin, J., Yanowitz, K.L., Miller, C.A., Grippo, A., & Kennon, J.T. (2011). Enhanced environmental education in middle school classrooms by graduate students in the Arkansas Delta. MidSouth Society of Environmental Toxicology and Chemistry Annual Meeting.

Bouldin, J., Yanowitz, K.L., Miller, C.A., Grippo, A., & Kennon, J.T. (2011). Enhanced environmental education in middle school classrooms by graduate students in the Arkansas Delta. North American Benthological Society Annual Meeting.

Kennon, J.T., Miller, C., Wynia, A., Bouldin, J., & Grippo, A. (2011). Fun Hands-On Environmental Science Activities for Middle Grades. Arkansas Curriculum Conference.

Kennon, J.T., & Bennett, B. (2011). High Altitude Balloon Project. Thirty-Third Annual Texas Star Party.

Kennon, J.T., Ali, H., & Williams, T. (2011). Intensities of Red, Green and Blue Light in the Atmosphere. Arkansas Space Science Symposium.

Ali, H., & Kennon, J.T. (2011). Investigating the Boundary layer variations as a function of altitude. National Conferences on Undergraduate Research.

Ali, H., & Kennon, J.T. (2011). Measurment of tropospheric water vapor in relation to climate change. 95th Arkansas Academy of Science Meeting.
Ali, H., & Kennon, J.T. (2011). Upper Tropospheric Chemistry in Relation to Climate Change. 2011 NASA EPSCoR Research Team Network Meeting.

Kennon, J.T., Grippo, A., Hall, J., Stewart, J., Prince, L., Haagenson, K., Skelton, C., Kennon, M.E., Holton, D., & Vaughan, G. (2010). A Fun Environmental Science Experiment Using Water Fleas. Arkansas Curriculum Conference 2010.

Kennon, J.T. (2010). Arkansas BalloonSAT Program. 17th Annual Arkansas Undergraduate Research Conference.

Kennon, J.T. (2010). ASU BalloonSAT Program. 18th Annual Arkansas Space Grant Symposium.

Ali, H., & Kennon, J.T. (2010). Conditions in the upper atmosphere related to climate change. 2010 Arkansas INBRE Research conference.

Ali, H., & Kennon, J.T. (2010). Conditions in the upper atmosphere related to climate change. Midsouth Inorganic Chemists Association.

Grippo, A., Kennon, J.T., Hall, J., Engelken, R., Yanowitz, K., Trautwein, J., & Bouldin, J. (2010). C-STAF: Creating STEM Teachers for Arkansas' Future. Noyce National Conference.

Kennon, J.T., Miller, C., Hall, J., Bouldin, J., Lisko, K., & White, A. (2010). Environmental Science, Inquiry-based Activities for The Classroom. Arkansas Curriculum Conference 2010.
Ali, H., & Kennon, J.T. (2010). Measurments of Stratospheric water vapor by weather balloons. 2010 SE/SW ACS Regional meeting.

Bouldin, J., Yanowitz, K.L., Miller, C.A., Grippo, A., & Kennon, J.T. (2010). Pedagogy by graduate students enhance communication skills and science education in the Arkansas Delta. Society of Environmental Toxicology & Chemistry North America annual meeting.

Draganjac, M., Burns, W., Kennon, J.T., Panigot, M., Ontko, A., Koizumi, H., Warby, R., Cron, S., & Rougeau, B.L. (2010). Pre- and post-assessment of general chemistry students. 240th ACS National Meeting.

Kennon, J.T. (2009). ASU BalloonSAT Program. 17th Annual Arkansas Space Grant Symposium.

Bouldin, J., Sappington, D.R., Yanowitz, K.L., Grippo, A., Miller, C.A., & Kennon, J.T. (2009). Enhancing middle school science education in the Arkansas rural schools by Environmental Sciences and Molecular Biosciences graduate students. SETAC North America Meeting.

Kennon, J.T., Miller, C., Grippo, A., Hall, J., McKie, A., & Schirmer, S. (2009). "GK12: Environmental & Molecular Biosciences in the Natural State". Arkansas Curriculum Conference 2009.
Kennon, J.T., & Roberts, E. (2009). High Altitude Balloon Research In Arkansas. Arkansas Curriculum Conference 2009.

Kennon, J.T., & Pratte, J.M. (2009). Students on the Edge of Space, Year II. SENCER SSI 2009.

FinCannon, M., & Kennon, J.T. (2009). The Effects of High Altitude Conditions on Different Organisms. RISE Poster Presentation.

Pratte, J.M., & Kennon, J.T. (2008). Atmospheric Dynamics. SENCER Washington Symposium.

Kennon, J.T., Roberts, E., & Fuller, T.K. (2008). Edge of Space: BalloonSAT's & CricketSAT's. 2008 National Conference on Science Education.

Christian, A., Kennon, J.T., & Hall, J. (2008). "GK12: Environmental & Molecular Biosciences in the Natural State". Arkansas Curriculum Conference.

Kennon, J.T., Burns, W., Draganjac, M., Redeker, K., Dowling, C., Cron, S., Rougeau, B., & Bryant, M. (2008). Pre- and post-assessment of general chemistry students. 235th National ACS meeting.

Kennon, J.T., & Roberts, E. (2008). Rockets, not just a store bought model anymore.. Arkansas Curriculum Conference.

Kennon, J.T., & Pratte, J.M. (2008). Students on the Edge of Space. SENCER Summer Institute 2008.

Kennon, J.T., Roberts, E., & Fuller, T.K. (2007). Arkansas academy of space science for educators high altitude balloon project. Arkansas Curriculum Conference.

Kennon, J.T. (2007). High altitude balloon project. Twenty-ninth Annual Texas Star.

Kennon, J.T. (2007). Levels of understanding of physical science concepts of college. National Science Teachers Association Conference.

Huss, M., & Kennon, J.T. (2007). Oral presentation: The edge of space over Arkansas: Arkansas BalloonSat. Arkansas Academy of Science 91st Annual Meeting.

Kennon, J.T., & Ross, C.A. (2007). Planning and teaching standards-based science lessons: tips for preservice teachers. Arkansas Curriculum Conference.

Huss, M., & Kennon, J.T. (2007). Poster presentation: Arkansas igh altitude balloon initiative. 15th Annual Arkansas Space Grant Symposium.

Huss, M., & Kennon, J.T. (2007). Poster presentation: The edge of space over Arkansas: Arkansas BalloonSat. Arkansas Academy of Science 91st Annual Meeting.

Kennon, J.T., & Ross, C.A. (2007). Science laboratory safety training for 7-12 Arkansas teachers. Mid-South Educational Research Association Conference.

Kennon, J.T., & Ross, C.A. (2007). Science laboratory safety training for grades 7-12 Arkansas. National Science Teachers Association Conference.

Kennon, J.T., & Roberts, E. (2007). The edge of space over Arkansas: Arkansas balloonsat. Arkansas Academy of Science 91st Annual Meeting.

Kennon, J.T., & Roberts, E. (2007). The edge of space over Arkansas: Arkansas balloonsat. Fifteenth Annual Arkansas Space Grant Symposium.

Other
Completed/Published
Kennon, J.T., & Meeks, G. (2010). Report to the Botswana Ministry of Education.

Kennon, J.T. (2007). Science is supposed to be fun. *Liz Fulton*.
Accepted.

Kennon, J.T. (2012). Program Report for the Preparation of Science Teachers.

Professional Development

Arkansas Curriculum, Little Rock, Arkansas Fall 2012.
2012 Fall Southeast Regional Space Grant Meeting, Little Rock, Arkansas Fall 2012.
ASU Common Core Conference, ASU Jonesboro, Arkansas Fall 2012.
Mid-South Educational Research Association Conference, Hot Spring, AR Fall 2007.
Mission Expedition, Manila, AR.Summer 2008.
18th Annual Arkansas Space Grant Symposium, Morrilton, AR. Spring 2010.
17th Annual Arkansas Space Grant Symposium, Morrilton, AR Spring 2009.
Seventh Annual NSF Robert Noyce Teacher Scholarship Program Conference, Washington D.C., District of Columbia Summer 2012.
Fifteenth Annual Arkansas Space Grant Symposium, Morrilton, AR Spring 2007.
"20th Annual Arkansas Space Grant Symposium," Arkansas Space Grant Consortium. (April 22, 2012)., Morrilton, AR Spring 2012.
NSF's STEM Talent Expansion (STEP) Program Review Panel, Arlington, Virginia Fall 2011.
Arkansas Curriculum Conference, Little Rock, Arkansas Fall 2011.
UTeach Open House, Austin, TX Fall 2011.
Thirty-Third Annual Texas Star Party, Fort Davis, TX Summer 2011.

19th Annual Arkansas Space Grant Symposium, Morrilton, AR Spring 2011.
2011 Arkansas NASA EPSCoR Workshop, Morrilton, AR Spring 2011.
240th American Chemical Society, Boston, MA Fall 2010.
Arkansas Curriculum Conference 2010, Little Rock, AR Fall 2010.
17th Annual Arkansas Undergraduate Research Conference, Arkadelphia, AR Spring 2010.
16th Annual Space Exploration Education Conference, Houston, Texas Spring 2010.
SENCER Summer Institute, Chicago, Illinois Fall 2009.
Arkansas Curriculum Conference 2009, Little Rock, AR Fall 2009.
Mathematics and Science Partnerships Program, San Francisco, California Spring 2008.
SENCER Summer Institute 2007, Portland, Maine Fall 2007.
Arkansas Curriculum Conference, Little Rock, AR Fall 2007.
Arkansas Academy of Science 91st Annual Meeting, Russellville, AR Spring 2007.
Twenty-ninth Annual Texas Star Party, Fort Davis, TX Spring 2007 - Summer 2007.

Institutional Committees

University

Council on Professional Education (University) Fall 2003 - Summer 2012.
Secondary Science Programs Committee (University) Fall 2002 – Present.
Department Promotion, Retention and Tenure Committee (University) Fall 2008 – Present.

Other Institutional Service

Conceptual Framework (Initial Programs) Task Force (University) Fall 2012 - Present
ASU Representative, Arkansas Space Grant Consortium Board (University) Spring 2012 – Present.
NSF STEM Review Panel (University) Fall 2011.
(Committee Member) Analytical Chemistry Faculty Search (University) Fall 2011 - Summer 2012.
(Committee Member) Secondary Education Programs Committee (University) Fall 2010 – Present.
(Special Institutional Assignment) Botswana Educational Exploratory Trip (University) Spring 2010 - Summer 2010.
(Committee Member) Chemistry Faculty Search Committee (University) Fall 2008 - Summer 2009.
(Committee Member) Departmental Promotions, Tenure, and Retention Committee (University) Summer 2008 – Present.
(Committee Chair) Physical Science Instructor Search Committee (University) Fall 2007 - Fall 2008.
(Committee Member) NCATE Standard 3 Writing Committee (University) Fall 2006 - Summer 2012.
(Faculty Mentor) General Chemistry Lecture Committee (University) Fall 2006 - Summer 2008.

Director, Northeast Arkansas Regional Science Fair (University) Fall 2004 - Present
(Committee Chair) Secondary Science Screening Committee (University) Fall 2002 – Present.
(Committee Chair) 7-12 Forum (University) Fall 2002 - Fall 2010.

Professional Service

Member, National Science Teachers Associaiton Summer 2012.
Reviewer, Ad Hoc Reviewer, Association for Science Teacher Education Summer 2012.
Jacksonport State Park Summer 2012 - Fall 2007 Guest Speaker, Cross County Amateur Radio Club Summer 2012 - Fall 2007.
Member, Astronomical Society of the Pacific Summer 2012.
Member, National Association of Biology Summer 2012.
Committee Member, Arkansas Co-Teach Collaborative Wynne HS Fall 2007 - Summer 2012.
Committee Chair, Arkansas Academy of Science-Science Education Committee Spring 2007 - Summer 2012.
Committee Chair, Arkansas Curriculum Conference Fall 2006 – Present.
Committee Chair, Arkansas Curriculum Conference Fall 2006 - Present.
Committee Chair, Arkansas Science Teachers Association Fall 2006 - Summer 2012.
Committee Member, Arkansas Mathematice, Science, Technology Coalition Board Fall 2006 - Summer 2008.
Director, Northeast Arkansas Regional Science Fair Fall 2004 – Present.

Community Service

Jacksonport State Park, Guest Speaker Fall 2012.
Guest Speaker, Cross County Amateur Radio Club.Summer 2009.
Guest Speaker, Cross County Amateur Radio Club Summer Fall 2007.
Jackson Port State Park Fall 2007.
Valley View 6th Grade Astronomy Night Spring 2012.
Guest Speaker, Jacksonport State Park Fall 2011.
Guest Speaker, Jacksonport State Park Fall 2010.
Valley View Sixth Grade Astronomy Night Fall 2010.
Guest Speaker, Nettleton Middle School Fall 2010.
Guest Speaker, Jacksonport State Park Fall 2009.
Valley View Sixth Grade Astronomy Night Fall 2009.
Craighead County Jonesboro Public Library Astronomy Night Spring 2009.
Guest Speaker, Craighead County Jonesboro Public Library Spring 2009.
Guest Speaker, Jackson Port State Park Fall 2008.
Valley View Sixth Grade Astronomy Night Fall 2008.
Guest Speaker, Jacksonport State Park Fall 2008.
Guest Speaker, Lake Poinsett State Park, Harrisburg, AR Summer 2008.
Guest Speaker, Craighead County Jonesboro Public Library Summer 2007.
Chairperson, Northeast Arkansas Regional Science Fair Fall 2004 – Present.

Other Service

Summer GK12 Program Workshop , ASU & NSF Summer 2012.

Summer GK12 Program supporting ASU's GK12 NSF program involving nine ASU Graduate students and 18 Arkansas Teachers Summer 2012.

Noyce Summer Workshop , ASU & NSF Summer 2012.

Summer workshop supporting ASU's Noyce Scholarship Program which is funded by NSF. Eight undergraduate students participated in this program.

Weaving Together Science & Common Core Mathematics & Literacy Through Problem-based Learning , ASU & NCLB Summer 2012.

Weaving Together Science & Common Core Mathematics & Literacy Through Problem-based Learning Summer Workshop. I served as an instructor providing instructions for 20 to 30 middle school teachers for a two week workshop focused on physical science during July 2012.

Curriculum Vitae

Dr. Hideya Koizumi

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P.O. Box 419
State University, AR 72467

Office LSW 330B
Lab LSW 508
Tel (870) 972-2399 Office

FAX (870) 972-3089
Email hkoizumi@astate.edu

Position Held

Instructor	Chemistry	Arkansas State University	2009
Assistant Prof. of Chemistry		Arkansas State University	2009-Current

Education

B.S. in Chemistry, Oklahoma State University -1996
(Advisor, Prof. Lionel Ruff)
B.S. in Mathematics, Oklahoma State University -1997
Ph.D. in Chemistry, University of Utah -2004
(Prof. Peter B. Armentrout)
Post Doctoral Study at University of North Carolina at Chapel Hill
Camille and Henry Dreyfus Postdoctoral Fellowship -2006
(Prof. Tomas Baer)
Post Doctoral Study at Oak Ridge National Laboratory -2008
(Dr. Peter T. A. Reilly)

PhD. Dissertation

"Collision Induced Dissociations and Association Reactions Using Guided Ion Beam Tandem Mass Spectrometer Application of Statistical Theory" [2004]
Dissertation Summary

Kinetic energy dependence of collision induced dissociation and association reactions are investigated using guided ion beam tandem mass spectrometer. New thermokinetic method for large systems are developed and tested in several cases.

Award

Recipient of Camille and Henry Dreyfus Postdoctoral Fellowship 2004-2006

Current Interest

Electrospray jet simulation, Quantum Mechanics, FEM, parallel computing.

http://gpuscience.com/articles/application-of-parallel-hybrid-algorithm-in-massively-parallel-gpgpu/

Peer Reviewed Publications

[1] Collision-Induced Dissociation and Theoretical Studies of Cu^+-Dimethyl Ether Complexes,
Koizumi, H.; Zhang, X.-G.; Armentrout, P. B.; *J. Phys. Chem. A.; 105*(11); 2001, pp. 2444-2452
[2] Collision-Induced Dissociation and Theoretical Studies of Cu^+-Dimethoxyethane Complexes,
Koizumi, H.; Armentrout, P. B.; *Journal of The American Society for Mass Spectrometry*; *12*(5); 2001, pp. 480-489.
[3] Bond Dissociation Energies and Structures of $CuNO^+$ and $Cu(NO)_2^+$,
Koszinowski, K.; Schroder, D.; Schwarz, H.; Holthausen, M. C.; Sauer, J.; **Koizumi, H.**; Armentrout, P. B.; *Inorg. Chem; 41*(22); 2002, pp. 5882-5890.
[4] Collision-Induced Dissociation and Theoretical Studies of $Ag^+(methanol)_n$, n = 1- 4,
Koizumi, H.; Larsen, M.; Armentrout, P. B.; Feller, D.; *J. Phys. Chem. A.*; *107*(16); 2003, pp. 2829-2838.
[5] Sequential Bond Energies of $Ag^+(H_2O)_n$ and Ag^+(dimethyl ether)$_n$, n = 1–4, determined by threshold collision-induced dissociation,
Koizumi, H.; Larson, M.; Muntean F.; Armentrout P. B.; *International Journal of Mass Spectrometry*; *228*(2-3), 2003, pp. *221-235*
[6] The Kinetic Energy Dependence of Association Reactions. A New Thermokinetic Method for Large Systems,
Koizumi, H.; Armentrout, P. B.; *The Journal of Chemical Physics*; *119*(24), 2003, pp. 12819-12829
[7] Reaction of Cu^+ with Dimethoxyethane: Competition Between Association and Multiple Dissociation Channels,
Koizumi, H.; Muntean F.; Armentrout P. B.; *The Journal of Chemical Physics*; *120*(2), 2004, pp. 756-766
[8] Heats of Formation of the Acetyl Radical and Ion Obtained by Threshold Photoelectron Photoion Coincidence,
Fogleman, E. A.; **Koizumi, H.**; Kercher, J. P.; Sztaray, B.; Baer, T.; *J. Phys. Chem. A.*; *108*(24); 2004, pp. 5288-5294.
[9] The Heats of Formation of *tert*-Butyl Isocyanide and Other Alkyl Isocyanides by Photoelectron Photoion Coincidence Spectroscopy,
Koizumi, H.; Baer, T.; *J. Phys. Chem. A.*; *108*(28); 2004, pp. 5956-5961.
[10] Heats of Formation of the Propionyl Ion and Radical and 2,3-Pentanedione by Threshold Photoelectron Photoion Coincidence Spectroscopy,
Kercher, J. P.; Fogleman, E. A.; **Koizumi, H.**; Sztaray, B.; Baer, T.; *J. Phys. Chem. A.;109*(5); 2005, pp. 939-946.

[11] Sequential Bond Energies of $Fe^+(CO_2)_n$, n = 1-5, Determined by Threshold Collision-Induced Dissociation and ab Initio Theory**,**
Armentrout, P. B.; **Koizumi, H.**; MacKenna, M.; *J. Phys. Chem. A.;* 2005; *109*(50) pp. 11365-11375
[12] Heats of Formation of GeH_4, GeF_4 and $Ge(CH_3)_4$,
Koizumi, H.; Davalos, J. Z.; Baer, T.; *Chemical Physics* ; 2006; 324(2-3) pp. 385-392
[13] Heat of Formation of Ge $(CH_3)_3X$ X = Cl, Br, CH_3,
Davalos, J. Z.; **Koizumi, H**.; Baer, T. *J. Phys. Chem. A.;* 2006; *110*(15) pp. 5032-5037
[14] Trapping of Intact, Singly-Charged, Bovine Serum Albumin Ions
Injected from the Atmosphere with a 10-cm Diameter, Frequency-Adjusted, Linear Quadrupole Ion Trap,
Koizumi, H.; Whitten, W.B; Reilly P.T., *Journal of The American Society for Mass Spectrometry*; Volume: 281 Issue: 3 Pages: 108-114
[15] The Effect of Endcap Electrode Holes on the Resonant Ejection from an Ion Trap,
Koizumi, H.; Whitten, W.B; Reilly P.T., Koizumi, E., *International Journal of Mass Spectrometry* Volume: 281 Issue: 3 Pages: 108-114
[16] Derivation of mathematical expressions to define resonant ejection from square and sinusoidal wave ion traps,
Koizumi, H.; Whitten, W.B; Reilly P.T., Koizumi, E
International Journal of Mass Spectrometry Volume: 286 Issue: 2-3 Pages: 64-69
[17] Controlling the Expansion into Vacuum-the Enabling Technology for Trapping Atmosphere-Sampled Particulate Ions
Koizumi H, Wang XL, Whitten WB, Reilly P.T.,
Journal of The American Society for Mass Spectrometry Volume: 21 Issue: 2 Pages: 242-248
[18] A novel phase-coherent programmable clock for high-precision arbitrary waveform generation applied to digital ion trap mass spectrometry
Koizumi H, Jatko B, Andrews WH, Whitten WB, Reilly P.T. *International Journal of Mass Spectrometry*
Volume: 292 Issue: 1-3 Pages: 23-31
[19] Theoretical and ATR-FTIR Study of Free 12-Crown-4 in Aqueous Solution
Tanika Arora, Hashim Ali, W. A. Burns, E. Koizumi, **H. Koizumi**
Chemical Physics Letters
Volume. 502, Issue: 4-6, Pages: 253-258
[20] Simulation of duty cycle-based trapping and ejection of massive ions using linear digital quadrupoles: The enabling technology for high resolution time-of-flight mass spectrometry in the ultra high mass range
J. Lee, M A. Marino, **Koizumi H**, Reilly P.T. *International Journal of Mass Spectrometry*
Volume: 304 Issue: 1, Pages: 36-40
[21] An Investigation of aqueous Sr, Rb, and Crown Ether Mixture Solutions by ESI-QITMS by Post Column Addition
Sheng Song, Rohana Liyanage, Jackson Lay, Richard Warby, **Koizumi H**, *Analytical letters* Volume. 44, Issue: 12, Pages 2170-2181

[22] A hybrid approach to calculating Coulombic interactions: An effective and efficient method for optimization of simulations of many ions in quadrupole ion storage device with SIMION
Saito K., Reilly P. T. A., Koizumi E., **Koizumi H.**, *International Journal of Mass Spectrometry* Volume: 315 Issue: 1, Pages: 74-80
[23] Application of Parallel Hybrid Algorithm in Massively Parallel GPGPU—The Improved Effective and Efficient Method for Calculating Coulombic Interactions in Simulations of Many Ions with SIMION
Saito K., Koizumi E., **Koizumi H**., *Journal of The American Society for Mass Spectrometry* Volume: 23 Issue: 9 Pages: 1609-1615

Patents Awarded
[1] US Patent
20090256640 AGILE HIGH RESOLUTION ARBITRARY WAVEFORM GENERATOR WITH JITTERLESS FREQUENCY STEPPING 10-15-2009
Provisionally patent application to USPTO (through ASU Research and Development Institute)
[2]Application number 61493212
"SEQUENTIAL DIFFERENTIAL MOBILITY ANALYZER AND METHOD OF USING SAME"

Teaching
Analytical Chemistry
Physical Chemistry

Professional affiliations
American Society for Mass Spectrometry
American Chemical Society
American Association for Aerosol Research

Argelia Lorence, Ph.D.

Associate Professor in Metabolic Engineering
Arkansas Biosciences Institute and Department of Chemistry and Physics
Arkansas State University
PO Box 639, State University, AR, 72467, USA
Office 870 680 4322, Fax 870 680 4348, alorence@astate.edu

Place of Birth

Mexico City, Mexico

Languages

Spanish, English

Education

PhD, Biotechnology (1997) *Instituto de Biotecnología (IBT), Universidad Nacional Autónoma de México (UNAM),* Cuernavaca, Mexico. Advisor: Prof. Alejandra Bravo de la Parra. Dissertation: "Analysis of the Pore-forming Activity of *Bacillus thuringiensis* Cry Proteins in the Presence of their Native Receptor"

MS, Biotechnology (1995), *Instituto de Biotecnología (IBT), Universidad Nacional Autónoma de México (UNAM),* Cuernavaca, Mexico. Advisor: Prof. Rodolfo Quintero-Ramírez. Dissertation: "Design of a Novel Screening Method for New *Bacillus thuringiensis* δ-Endotoxins"

BS, Biochemical Engineering (1991), *Universidad Autónoma Metropolitana-Iztapalapa(UAM-I),* Mexico.

Appointments

2009 - date	*Associate Professor in Metabolic Engineering (tenured May 2010*), ABI and Department of Chemistry and Physics, Arkansas State University (ASU), Jonesboro, AR, USA
2005 - 2009	*Tenure-Track Assistant Professor in Metabolic Engineering*, Arkansas Biosciences Institute (ABI), and Department of Chemistry and Physics, Arkansas State University (ASU), Jonesboro, AR, USA
2002 - 2005	*Post-doctoral Research Associate*, Department of Plant Pathology, Physiology and Weed Science (PPWS), Virginia Tech, Blacksburg, VA
2000 - 2001	*Visiting Scientist*, Department of Plant Pathology, Physiology and Weed Science (PPWS), Virginia Tech (VT), Blacksburg, VA, USA
2000	*Visiting Scientist*, Department of Biology, Texas A&M University (TAMU), College Station, TX, USA
1998 - 2002	*Assistant Professor*, *Centro de Investigación en Biotecnología (CEIB), Universidad Autónoma del Estado de Morelos (UAEM),* Cuernavaca, México

Continuous education

Career development skills

"Summer Leadership Institute" organized by Society for the Advancement of Hispanic/Chicanos and Native Americans in Science (SACNAS) and the American Association for the Advancement of Sciences (AAAS), Washington, DC July 19-23, 2010.

"Coaching Strong Women in the Art of Strategic Persuasion" organized by the Committee On the Advancement of Women Chemists (COACh) Annual Spring Meeting of the American Chemical Society. Atlanta, GA, March 25, 2006.

"Communicating Science to the Public" organized by Drs. Aldemaro Romero and Amy Pierce, Arkansas State University, Jonesboro, March 4, 2006.

Training course for scientists to facilitate their abilities to communicate science to the media imparted by Fleishman-Hillard of Mexico. Organized by *AgroBio* México and the Mexican Society of Biotechnology and Bioengineering *(SMBB).* September 9, 2001, Veracruz, Mexico.

Honors and Awards

2012	Member of the Advisory Board of the Phytochemical Society of North America
2011	Recipient *Outstanding Hispanic Achiever of the Year*, award from the Hispanic Community Services of Jonesboro, AR, May 14, 2011
2011	Interim Chair, *Student Affairs Awards Committee* of the Society for In Vitro Biology
2010 -	*Faculty of 1000* –Plant Biology - Agriculture and Biotechnology Section
2010	*Distinguished Woman in Science*, Congress of the State of Morelos, Cuernavaca, Morelos, Mexico (one of nine awards given to distinguished women as part of the Day of Women's Celebration, March 8, 2010)
2010	*Recognition for Contributions to Science and Technology of the State of Morelos*, Government of the City of Cuernavaca, Cuernavaca, Morelos, Mexico (special recognition given as part of the Day of Women's Celebration, March 8, 2010)
2009-	Member of the *Student Affairs Awards Committee* of the Society for In Vitro Biology
2008	Recipient *Dean's Horizons Award 2008*, College of Sciences and Mathematics, Arkansas State University
2007-	Elected Secretary of the *Faculty Research Committee*, Arkansas State University, September 2007. Re-elected for the period 2008-2009
2007	*Ad-honorem* external reviewer, National Council of Science, Technology and Innovation (*Secretaría Nacional de Ciencia, Tecnología e Innovación, SENACYT*), Panama City, Panama, May 2007 to date
2006	Featured mentor in the book *The Paths We Tread II*, Minority Environmental Leadership Development Initiative (MELDI), University of Michigan
2006	Member Sigma Xi, June 2006 to present
2006	Travel Award, Committee on the Advancement of Women Chemists (COACh).
2002	Arthur Neish Young Investigator Award, Phytochemical Society of North America (PSNA)
2002	Post-doctoral Travel Award, Virginia Tech
2000	Post-doctoral Fellowship, *UAEM,* México
1999-2001	Young Investigator Award (equivalent of the CAREER-NSF award) *Consejo Nacional de Ciencia y Tecnología, (CONACYT),* México
1999	Teaching Award, *Facultad de Biología, Universidad Autónoma del Estado de Morelos*
1998	"*Alfonso Caso* Medal" 1st place PhD, class of 1997, *UNAM*, Mexico
1997	"*Gabino Barreda* Medal" 1st place MS, class of 1995, *UNAM*, Mexico
1995-2001	Scholar, *Sistema Nacional de Investigadores* (*SNI*), Mexico
1992-1997	Scholar, *CONACYT*, México. Funding for MS and PhD studies
1993	1st place "*Maestro Jesus Silva Herzog* Economy Award" Participant in the winner project: "The Technological Change in the Mexican Agriculture and Agro-industry"

Research Sponsors

Current

Title: “Mechanisms Leading to Enhanced Tolerance to Oxidative Stress and Increased Lifespan in Arabidopsis: Role of Mitochondrial, ER, and Chloroplastic Enzymes Involved in Ascorbate Biosynthesis”
Agency: NIH - Arkansas INBRE (subaward from P20-RR-016460)
A Lorence (PI)
Award (Lorence project): $579,198 (05/01/10 – 04/30/15).

Title: “Physiological and Genetic Mechanisms Underlying Salt tolerance in Rice Across Developmental Stages”
Agency: NSF-IOS-Plant Genome Research Project
H Walia (University of Nebraska, PI), AJ Lorenz, A Samal, D Wang (University of Nebraska, Co-PIs), A Lorence (ASU, Co-PI)
Award: $2,035,509 (ASU $193,874) (03/01/13-02/28/16).

Title: “Vitamin C Screening and Phenotyping of Selected Rice Materials”
Agency: Research Support Agreement, USDA ARS Dale Bumpers National Rice Research Center
A Lorence (ASU, PI), A McClung (USDA-ARS, PI)
Award: $22,400 USDA + $8,000 match from ASU- College Sci and Math (08/01/12-07/31/13).

Pending

Title: “High throughput Phenotyping and Redox Status as Tools to Study Graphene Toxicity in Plants”
Agency: ARK-FDA MOU Nanotechnology Research Consortium
A Lorence (PI)
Requested: $193,664
Submitted: July 18, 2012.

Title: “6225-21220-004-00D Using Genetic Approaches to Reduce Crop Losses in Rice Due to Biotic and Abiotic Stress”
Agency: USDA ARS Dale Bumpers National Rice Research Center
Y Jia (Overall PI), A Lorence (PI ASU component)
Submitted: September 27, 2012
Note: Budget to be developed.

Title: “Impact of plant redox responses, fatty acid desaturation, and salicylate signaling on plant immunity to aphids”
Agency: NSF-IOS-Symbiosis, Defense and Self Recognition
FL Goggin (UAF, PI), A Lorence (ASU, Subcontractor), R Hancock (James Hutton Institute, Scotland, Subcontractor)
Pre-proposal: No budget required
Submitted: Jan 18, 2013.

Past

Period	Amount	Source	Project Title
07/01/11-12/31/12	$120,000 [ASU $25K]	Statewide ABI	Developing an Immunotoxicology Center in Arkansas - K Gilbert (PI) and A Lorence (Co-PI)
01/01/12-12/31/12	$4,000	EPSCoR Fellowship Award (#EPS-1003970), ASTA	The Interplay Between Ascorbic Acid and Abscisic Acid (ABA) in ABA Insensitive Arabidopsis Mutants - A Lorence (PI)
09/01/11-08/20/12	$40,000 [ASU $14K]	Arkansas Space Grant Consortium (ASGC)	Genetic Engineering of the Phosphoinositol Pathway as an Effective Strategy for Enhancing Production of Plant Antioxidants for Advanced Life Support - M Khodakovskaya (PI), A Lorence (Co-PI)
01/01/12-12/31/12	$4,000	NSF EPSCoR P3 Center Next-Gen Sequencing Pilot Award	Transcriptome sequencing approach to understanding the role of the cytosolic and ER pools of ascorbate in Arabidopsis – A Lorence (PI)
08/01/08 -12/31/11	$190,000	Arkansas Children's Hospital Research Institute (ACHRI)	TCE Toxicity and Remediation –K Gilbert (PI), C Cramer, A Lorence and F Medina-Bolivar (Co-PIs)
01/25/11- 04/30/11	$20,000	NIH-Arkansas INBRE	Acquisition of Equipment to Enhance Teaching and Research at Arkansas State University- A Lorence (PI), S Yu, E Benjamin and R Buchanan (Co-PIs)
05/15/08 – 10/31/10	$249,860	NSF EPSCoR P3 Center Collaborative Seed Grant Program	Role of Ascorbate in Mitigating ER and Cellular Stress Associated with Transient and Stable Plant-Based Protein Production - A Lorence (PI), M Dolan and V Srivastava (Co-PIs)
05/15/08 -10/31/10	$249,978	NSF EPSCoR P3 Center Collaborative Seed Grant Program	Intersection of Ascorbate Regulation, Jasmonate-Signaling, and Defense Against Hervibores in Plants – F Goggin and A Lorence (Co-PIs)
12/15/09 -10/31/10	$40,000 [ASU $14K]	Arkansas Space Grant Consortium	Enhancing Production of Pharmacologically Active Phytochemicals in Plants for Advanced Life Support n Space Exploration
01/01/06- 04/30/10	$603,574	NIH-Arkansas INBRE	Role of Ascorbate in Coordinating Growth and Senescence in *Arabidopsis thaliana* – A Lorence (PI)
10/11/09-03/31/11	$150,000 [ASU $3,8K]	NIH-AREA	Artemisinin Biosynthesis: Role of Reactive Oxygen - P Weathers (PI), K

			Wobbe (Co-PI), A Lorence (consultant)
07/01/06- 06/30/09	$57,336	ABI	Collaborative Seed Grant: Mechanisms of Toxicity and Remediation of Superfund Environmental Toxicants - A Lorence, F Medina-Bolivar and K Redeker (Co-PIs)
01/01/09-04/30/09	$50,000	NIH-Arkansas INBRE	Acquisition of qRT-PCR and Electrophysiology Equipment - M Srivastsan, A Lorence, R Buchanan (Co-PIs)
10/01/07-06/30/09	$25,000	Nanotechnology Center, UALR	Arabidopsis as a Tool to Assess Toxicity and Fate of Nanomaterials - A Lorence (PI)
07/01/06-12/31/08	$6,500	Faculty Research Fund, ASU	Unraveling Sedative Triterpene Synthesis in *Galphimia glauca*: Phytochemistry and Functional Genomics Join Forces – A Lorence (PI)
01/01/08-04/30/08	$24,518	NIH-Arkansas INBRE	Acquisition of New Equipment and Shared Facilities – R Buchanan, M Srivatsan, A Lorence (Co-PIs)
07/01/07-06/30/08	$200,000	ACHRI	Developing an Immunotoxicology Center in Arkansas - K Gilbert (PI), S Blossom, B Przybyla, N Pumford, J Fuscoe, F Medina-Bolivar, K Redeker, and A Lorence (Co-PIs)
08/01/05-06/30/08	$230,000	ABI	Study and Manipulation of the Vitamin C – Cell Wall Metabolic Network for the Development of Plants with Enhanced Nutritional and Agronomical Properties – A Lorence (PI)
07/01/06-10/31/06	$2,000	ASU Research Foundation	Funding to attend “Workshop on HPTLC-MS”, October 9-11, 2006, Berlin, Germany – A Lorence (PI)
11/01/04-07/30/15	$29,000	Tobacco Initiative Fund, Virginia Tech	Metabolic Engineering for the Discovery of Human Therapeutics in Tobacco – F Medina-Bolivar (PI), A Lorence (Co-PI)
01/01/99-12/31/01	$100,000	*Consejo Nacional de Ciencia y Tecnología (CONACYT),* Mexico	Transformation of *Camptotheca acuminata* Cell Lines for the Production of Camptothecin, A Terpene with Anticancer and Antiretroviral Activities – A Lorence (PI)
01/01/95-12/31/97	$4,000	*Dirección General de Estudios de Posgrado, UNAM,* Mexico	Characterization of Regions in the Domain I of *Bacillus thuringiensis* Cry ProteinsInvolvedin Their Pore- Forming Activity – A Lorence (PI)

Consulting

November 01 – March 02

Bioskinco, SA de CV, Mexican biotechnological company producer of "*Epifast*" skin substitute for the treatment of diabetic foot, burns and other skin conditions. Main activity: preparation of grant proposals to the Mexican government.

1995-1998

CAMBIOTEC, initiative of the International Development Research Center (IDRC, Canada). International network with the mission to facilitate biotechnology-based applications in the agri-food and environmental management fields in Latin America. Advisor: Dr. José Luis Solleiro-Rebolledo. Main activity: development of "state of the art" reports published in Spanish and distributed in México, Colombia, Chile, Argentina and Canada. Topics: biopesticides (1996), potato (1997) and agrobiologicals (1998).

October 91 – January 92

Advisor: Prof. Rodolfo Quintero-Ramírez, Director of the Biotechnology Regional Program for Latin America and the Caribbean of the United Nations (UNIDO). Main activities: design of an industrial plant to produce *Bacillus thuringiensis*-based biopesticides to satisfy the demand of the countries of "Pacto Andino" (Bolivia, Colombia, Ecuador, Peru, and Venezuela). Make a directory of Mexican biotechnological companies.

Scientific Publications - English (*Post-doc and student authors)

Peer-Reviewed Articles

1. Lisko KA*, Hubstenberger J, Phillips G, Belefant-Miller H, McClung A, **Lorence A** (2013). Ontogenetic changes in vitamin C in selected rice varieties. *Plant Physiology and Biochemistry.* DOI:10.1016/j.plaphy.2013.01.016
2. Sharma A*, Folch-Mallol JL, Cardoso-Taketa AT, **Lorence A**, Villarreal ML (2012) DNA barcoding of the Mexican sedative and anxiolytic plant *Galphimia glauca*. *Journal of Ethnopharmacology* 144:371-378.
3. Cruz-Morales S, Castañeda-Gómez J, Figueroa-González G, Mendoza-García AD, **Lorence A**, Pereda-Miranda R (2012). Mammalian multidrug resistance lipopentasaccharide inhibitors from *Ipomoea alba* seeds. *Journal of Natural Products* 75: 1603-1611.
4. Haroldsen V, Chi-Ham CL, Kulkarni S*, **Lorence A**, Bennet AB (2011) Constitutively expressed DHAR and MDHAR influence fruit, but not foliar ascorbate levels in tomato. *Plant Physiology and Biochemistry* 49: 1244-1249.
5. Goggin FL, Avila CA, **Lorence A** (2010) Vitamin C content in plants is modified by insects and influence susceptibility to herbivory. *BioEssay*s 32: 777-790.
6. Suza WP*, Avila CA, Carruthers K, S Kulkarni*, Goggin FL, **Lorence A** (2010) Exploring the Impact of Wounding and Jasmonates on Ascorbate Metabolism. *Plant Physiology and Biochemistry* 48: 337-350.
7. Mannan A, Liu C, Arsenault P, Towler MJ, Vail D, **Lorence A**, Weathers PJ (2010) DMSO triggers the generation of ROS leading to an increase in artemisinin and dehydroartemisinic acid in *Artemisia annua* shoot cultures. *Plant Cell Reports*, 29(2):143-152.
8. Zhang W, **Lorence A**, Gruszewski HA, Chevone BI, Nessler CL (2009*) AMR1*, an Arabidopsis gene that coordinately and negatively regulates the mannose/L-galactose ascorbic acid biosynthetic pathway. *Plant Physiology* 150: 942-950.
9. Dabul ANG*, Belefant-Miller HB, RoyChowdhury M, Hubstenberger JF, **Lorence A**, Phillips GC (2009) Screening of a broad range of rice *(Oryza sativa* L.) germplasm for *in vitro* rapid

regeneration and development of an early prediction system. *In Vitro Cellular and Developmental Biology Plant* 44: 414-420.

10. Pereda-Miranda R, Villatoro-Vera R*, Bah M, **Lorence A** (2009) Pore-forming activity of morning glory resin glycosides in model membranes. *Revista Latinoamericana de Química* 37(2): 144-154.
11. Suza WP*, Harris RS*, **Lorence A** (2008) Hairy roots: From high-value metabolite production to phytoremediation. *Electronic Journal of Integrative Biosciences.* Published online November 21, 2008. http://clt.astate.edu/electronicjournal/Articles.htm
12. Schroeter C, House LA, **Lorence A** (2007) Fruits and Vegetable Consumption Among College Students in Arkansas and Florida: Food Culture vs. Health Knowledge. *International Food and Agribusiness Management Review* 10: 63-89.
13. **Lorence A**, Mendes P, Chevone BI, Nessler CL (2004) *myo*- Inositol Oxygenase Offers a Possible Entry Point into Plant Ascorbate Biosynthesis. *Plant Physiology* 134: 1200-1205.
14. **Lorence A**, Medina-Bolivar F, Nessler CL (2004) Camptothecin and 10-Hydroxycamptothecin from *Camptotheca acuminata* Hairy Roots. *Plant Cell Reports* 22: 437-441.
15. **Lorence A** and Nessler CL (2004) Camptothecin, Over Four Decades of Surprising Findings. *Phytochemistry* 65: 2735-2749. Review paper by invitation to section Molecules of Interest.
16. **Lorence A**, and Verpoorte R (2004) Gene Transfer and Expression in Plants. *Methods in Molecular Biology* 267: 329-350.
17. Radzio J, **Lorence A**, Chevone BI, Nessler CL (2003) L-Gulono-1,4-lactone Oxidase Expression Rescues Vitamin C Deficient Arabidopsis (*vtc*) Mutants. *Plant Molecular Biology* 53: 837-844.
18. Soberón M, Pérez RV, Núñez-Valdéz ME**, Lorence A**, Gómez I, Sánchez J, Bravo A (2000) Evidence for Intermolecular Interaction as a Necessary step for Pore-Formation Activity and Toxicity of *Bacillus thuringiensis* Cry1Ab Toxin. *FEMS Microbiology Letters* 191: 221-225.
19. **Lorence A**, Darszon A, Bravo A (1997) Aminopeptidase Dependent Pore Formation of *Bacillus thuringiensis* Cry1Ac Toxin on *Trichoplusia ni* Membranes. *FEBS Letters* 414: 303-307.
20. **Lorence A**, Darszon A, Díaz C, Liévano A, Quintero R, Bravo A (1995) δ-Endotoxins Induce Cation Channels in *Spodoptera frugiperda* Brush Border Membrane in Suspension and in Planar Lipid Bilayers". *FEBS Letters* 360: 217-222.
21. Bravo A, **Lorence A**, Quintero R (1995) Biopesticides Compatible with the Environment: *Bacillus thuringiensis* a Unique Model. *Biocontrol* 1: 41-55.

<u>Conference Proceedings</u>

Torres R*, Yactayo-Chang J*, García-López PM, Gurrola-Díaz CM, **Lorence A** (2011). Domesticated and wild lupins accumulate elevated foliar ascorbate levels. In "Lupin crops – an opportunity for today, a promise for the future". Naganowska B, P Kachlicki, B Wolko (eds). Proceedings of the 13th International Lupin Conference Poznan, Poland p. 190-194. ISBN 978-83-61607-73-1.

<u>Peer-Reviewed Articles (Submitted)</u>

1. Lisko KA*, Torres R*, Harris RS*, Belisle M*, Jullian B*, Vaughan MM*, Chevone BI, Mendes P, Nessler CL, **Lorence A**. Elevating vitamin C content via overexpression of *myo*-inositol oxygenase and L-gulono-1,4-lactone oxidase in Arabidopsis leads to enhanced biomass and tolerance to abiotic stresses. Submitted to *In Vitro Cellular and Developmental Biology Plant* (resubmitted 12/19/12)

2. Dolan MC, Medrano G, Rubio N*, Yactayo-Chang J*, **Lorence A**. Overcoming recombinant protein expression set points: Increased antioxidant levels improve foreign protein accumulation and recovery in plants. Submitted to *BMC Biotechnology* (08/2012).
3. Avila CA, Arévalo-Solíz ML, **Lorence A**, Goggin FL. Expression of *α-DOX1* in tomato and Arabidopsis contributes to plant defenses against aphids. Submitted to *Molecular Plant-Microbe Interactions* (01/28/13).

Manuscripts in Preparation

1. Lisko KA*, Aboobucker SI*, **Lorence A**. Engineering elevated vitamin C in plants to improve their nutritional content, growth, and tolerance to abiotic stress. In preparation to *Recent Advances in Phytochemistry*.
2. Suza WP, Radin JA*, Aboobucker SI*, Yactayo-Chang JP*, Trujillo-Lujan G*, **Lorence A** Leveraging transcriptomic data to probe regulation of the plant vitamin C network . In preparation to *Plant Physiology and Biochemistry*.
3. Harris RS*, Torres R*, Wilson G*, Lisko K*, Yactayo-Chang JP*, Suza WP*, Cooper R, Warby R, Gilbert K, **Lorence A**. Ascorbic acid protects plants from trichloroethylene toxicity and improves their phytoremediation potential. In preparation to *Journal of Bioremediation and Biodegradation*.
4. Aboobucker SI*, Suza WP*, **Lorence A** Substrate availability is a limiting factor to increase ascorbate through L-gulono-1,4-lactone oxidase in *Nicotiana benthamiana* and *Arabidopsis thaliana.* In preparation to *Plant Molecular Biology.*
5. **Lorence A**, Trujillo-Luján G*, Yactayo-Chang J*, Reidy M, Cramer CL, Mendes P, Nessler CL. Identification and characterization of a uronic acid reductase in *Arabidopsis thaliana.* In preparation to *Plant Physiology.*
6. Torres R*, Martin J*, Yactayo-Chang JP*, Gaxiola R, Lorence A. AVP and MIOX synergistically enhance growth and stress tolerance in Arabidopsis. In preparation to *Plant Cell Reports*.
7. Nair VP, Lisko KA*, **Lorence A**. Simultaneous determination of key vitamin C precursors using liquid chromatography- electrospray ionization mass spectrometry. In preparation to *Journal of Chromatography*.

Peer-Reviewed Abstracts

1. Lisko KA*, Hubstenberger JF, Belefant-Miller H, Phillips GC, Yan WG, McClung A, and **Lorence A** (2011). Screening rice cultivars for elevated vitamin C content. *In Vitro Cellular and Developmental Biology Animal* 47: S61.
2. Radin JA*, Suza WP, Goggin FL and **Lorence A** (2011) Ascorbate regulation in *Arabidopsis* jasmonate, abscisic acid and ethylene mutants. *In Vitro Cellular and Developmental Biology Animal* 47: S66-S67.
3. Medrano G, Rubio N, Radin J*, Srivastava V, Dolan, MC and **Lorence A** (2010) using antioxidants to improve recombinant protein production in transient and stable plant-based bioproduction platforms. *In Vitro Cellular and Developmental Biology Animal* 46: S198.
4. Weathers PJ, Mannan A, Liu C, Towler MJ, Vail D, **Lorence A** (2009) DMSO stimulates production of artemisinin an also suggest that the sesquiterpene may function as a ROS sink in *Artemisia annua*. *In Vitro Cellular and Developmental Biology Animal* 45:S69.
5. Lisko KA*, Harris RS*, Yactayo-Chang J* and **Lorence, A** (2008) Engineering ascorbate for enhanced growth, nutritional content, and stress tolerance in crops. *In Vitro Cellular and Developmental Biology Animal* 44: S28.
6. Nessler CL, **Lorence A**, Chevone B, and Mendes P (2005) The vitamin C network: New branches in plant biochemistry. *In Vitro Cellular and Developmental Biology Animal* 41: 18A.

7. **Lorence A**, Sánchez J, Darszon A, and Bravo A (1996) Pore Formation of the *Bacillus thuringiensis* Cry1Ac Toxin in Presence of the *Trichoplusia ni* Toxin-Receptor in Planar Lipid Bilayers" *Medical Microbiology and Immunology* 185: 114.

Editorial Work

Books

1. Editor of the book: "Recombinant Gene Expression, Reviews and Protocols, Third Edition" (2012) **A Lorence** (ed.) Molecular Biology Series, Humana/Springer, New York. ISBN # 978-1-61779-432-2, e-ISBN 978-1-61779-433-9, DOI 10.1007/978-1-61779-433-9.
2. Co-editor of the book: "Recombinant Gene Expression. Reviews and Protocols" (2004) P Balbás and **A Lorence** (eds). Molecular Biology Series. Humana Press, Totowa, 535 pp. ISBN 1-58829-262-2. *Included in the list of the 2004-2005 best sellers of Humana Press.*

Special Issue of Scientific Journal

Co-editor of a special issue "Hairy Roots: Recent Applications in Plant Biotechnology" of the *Electronic Journal of Integrative Biosciences* (http://clt.astate.edu/electronicjournal/). **A Lorence** and F Medina-Bolivar (co-editors), vol. 3, special issue 1. October 2008.

Book Chapters

1. **A Lorence** and CL Nessler (2007) Pathway engineering of the plant vitamin C metabolic network. In "Applications of Plant Metabolic Engineering" R Verpoorte, AW Alfermann and TS Johnson (eds). Springer, Dordrecht, chapter 8, pp 197-217.
2. E Aranda, **A Lorence**, and MR Trejo (2000) Rural Production of *Bacillus thuringiensis* by Solid State Fermentation. In "Entomopathogenic Bacteria: From Laboratory to Field Application". JF Charles, A Delecluse, and C Neilsen-Le Roux (eds). Kluwer Academic Publishers, Dordrecht, p. 317-332. ISBN 0-7923-6523-2.
3. **A Lorence** and R Quintero (2000) In Search of Novel and Better Bioinsecticides. In "Environmental Biotechnology and Cleaner Bioprocesses". EJ Olguín, G Sánchez, and E Hernández (eds). Taylor & Francis, London, p. 275-284. ISBN 0-7484-0729-4.
4. R Quintero, **A Lorence**, and C Wacher (1999) Cereal Fermentation in Latin American Countries. In "Fermented Cereals- A Global Perspective". Food and Agriculture Organization of the United Nations (FAO). Agricultural Services Bulletin 138, Rome, p. 99-114. ISBN 92-5-104296-9.
5. **A Lorence** and R Quintero (1997) Development of New Bioinsecticides. In "International Course: Biochemical Engineering Applications in Environmental Biotechnology and Cleaner Production". COBIOTECH Scientific Committee for Biotechnology of the International Council of Scientific Unions ICSU. Electronic course, available at: http://www.icaiti.org.gt.
6. Bravo A, J Cerón, E Aranda, **A Lorence**, and R Quintero (1995) Screening of *Bacillus thuringiensis* Strains With Novel Insecticidal Activities. In "*Bacillus thuringiensis* Biotechnology and Environmental Benefits". T-Y Feng *et al*. (eds). Hiang Yuan Publishing, Taipei, p. 87-103.

Intellectual Property

1. Dolan MC, **Lorence A**, Medrano G (2009). Methods and Compositions for Enhancing Polypeptide Production. International Patent Application PCT/US2010/053795.
2. Nessler CL, **Lorence A**, Mendes P, Chevone BI (2007) Increase in Plant Growth Rate, Biomass Accumulation and Stress Tolerance in Plants Over Expressing Genes of Ascorbic Acid-Cell Wall Biosynthetic Network. US Patent Application No. 11/908,551.

Outreach

A Lorence (2005) "Metabolic Engineering for the Improvement of the Nutritional and Agronomical Value of Crops" Annual Report of the Arkansas State University Foundation.

Scientific publications (Spanish)

Peer-Reviewed Articles

1. **A Lorence**, RL González and JL Solleiro (1993) Basic Elements for the Development and Spreading of Biotechnology, A Comparative Analysis (*Los Elementos Básicos para el Desarrollo y Difusión de la Biotecnología: Un Análisis Comparativo*). *Biotecnología* 3: 1-7.
2. A Bravo, **A Lorence** and R Quintero (1992) Perspectives for the Use of *Bacillus thuringiensis* as Bioinsecticide (*Perspectivas en la Utilización de Bacillus thuringiensis como Bioinsecticida). Biotecnología* 2: 139-154.

Technical Reports

1. **A Lorence** (1999) Agrobiologicals (*Agrobiológicos*). *Cuadernos de Vigilancia Tecnológica*. JL Solleiro and R Castañón (eds). *Iniciativa Canadá-América Latina de Biotecnología para el Desarrollo Sustentable (CAMBIOTEC).* International Development Research Center (IDRC) and *Núcleo de Innovación Tecnológica del Instituto de Ingeniería/UNAM*, Mexico City, 58 p.
2. **A Lorence** (1996) Biopesticides in the Context of Sustainable Agriculture (*Los Biopesticidas en el Marco de la Agricultura Sustentable*). *Cuadernos de Vigilancia Tecnológica*. JL Solleiro and R Castañón (eds). *Iniciativa Canadá-América Latina de Biotecnología para el Desarrollo Sustentable* (CAMBIOTEC), International Development Research Center (IDRC) and *Centro Para la Innovación Tecnológica/UNAM*, Mexico City, 72 p.

Book Chapters

1. P Balbás and **A Lorence** (2002) Corn Genetically Improved: Implications for the Agriculture in the State of Morelos (*Maíz Genéticamente Mejorado: Implicaciones para la Agricultura en el Estado de Morelos*). In "Land, Water and Corn II, Reality and Utopy" ("*Tierra, Agua y Maíz II. Realidad y Utopia*"). *UNICEDES/UAEM*, Cuernavaca, p. 167-182. ISBN 968-878-136-3.
2. P Balbás, C Abarca, AD Caro* and **A Lorence** (2000) Applications of Molecular Genetics in Medicine (*Aplicaciones de la Genética Molecular en la Medicina*). In "Biological Sciences: From Life Origin to Genetic Therapy" *("Ciencias Biológicas. Del Origen de la Vida a la Terapia Génica"*). E Sánchez-Salinas and ML Ortiz-Hernández (eds). *Universidad Autónoma del Estado de Morelos*, Cuernavaca, p. 223-255. ISBN 968-878-055-3.
3. P Balbás and **A Lorence** (2000) Protein Biosynthesis by Recombinant DNA (*La Biosíntesis de Proteínas por DNA Recombinante*). In "Biological Sciences: From Life Origin to Genetic

Therapy" *("Ciencias Biológicas, Del Origen de la Vida a la Terapia Génica*"). E Sánchez-Salinas and ML Ortiz-Hernández (eds). *Universidad Autónoma del Estado de Morelos*, Cuernavaca, p. 182-222. ISBN 968-878-055-3.

4. **A Lorence** and P Balbás (1998) Molecular Biology, A General Overview (*La Biología Molecular: Una Visión General*). In "Biology. Molecular Bases at the Threshold of the XXI Century" *("Biología. Sus Bases Moleculares en el Umbral del Siglo XXI"*). E Sánchez-Salinas and ML Ortiz-Hernández (eds). *Universidad Autónoma del Estado de Morelos*, Cuernavaca, p. 40-125. ISBN 968-878-038-3.
5. **A Lorence** (1997) Relevance and Potential of Biotechnology for Potato Crop (*Importancia y Potencial de la Biotecnología para el Cultivo de Papa*). In "*Potato and Chilli Pepper*" *("Papa y Chile"). Cuadernos de Vigilancia Tecnológica*. JL Solleiro and R Castañón (eds). *Iniciativa Canadá-América Latina de Biotecnología para el Desarrollo Sustentable (CAMBIOTEC)*, International Development Research Center (IDRC) and *Centro para la Innovación Tecnológica/ UNAM*. Mexico City, p. 11-78
6. A Bravo, M Ortíz, A Ortíz, J Cerón, E Aranda, J Sánchez, R Meza, ME Nuñez and **A Lorence** (1996) Search and Construction of New Insecticidal Proteins from *Bacillus thuringiensis* (*Búsqueda y Construcción de Nuevas Proteínas Insecticidas de Bacillus thuringiensis).* In "Frontiers in Biotechnology and Bioengineering" *("Fronteras en Biotecnología y Bioingeniería")*. E Galindo (ed). *Sociedad Mexicana de Biotecnología y Bioingeniería*, Mexico City, p. 375-379. ISBN 968-7735-00-7.
7. **A Lorence** and R Quintero (1996) Molecular Mechanism of Action of *Bacillus thuringiensis* δ-Endotoxins (Mecanismo Molecular de Acción de las δ-Endotoxinas de *Bacillus thuringiensis)*. In "Recent Progress in Biotechnology of *Bacillus thuringiensis*" *("Avances Recientes en la Biotecnología de Bacillus thuringiensis")*. Luis J Galán-Wong, C Rodríguez-Padilla and HA Luna-Olvera (eds). *Universidad Autónoma de Nuevo León (UANL)*, Monterrey, p. 63-113. ISBN 968-6337-98-9.
8. **A Lorence** (1992) Potential of Biotechnology for Tomato Production (*Potencialidades de la Biotecnología Para la Producción de Tomate*). In "Biotechnology and Its Socioeconomical and Political Consequences" *("La Biotecnología y sus Repercusiones Socioeconómicas y Políticas"*). R Casas, M Chauvet and D Rodríguez (coords). *Departamento de Sociología/UAM-A, Instituto de Investigaciones Económicas/UNAM, Instituto de Investigaciones Sociales/UNAM*. Mexico City, p. 301-317. ISBN 968-36-2703-X.

Presentations at professional meetings and invited lectures (*student authors)

Lectures (A Lorence, otherwise indicated)

1. Seminar, RiziCulture Seminar Series, Jonesboro, AR, January 24, 2013. "The Key Roles of Vitamin C in Regulating Plant Growth and Stress Tolerance in Plants" KA Lisko and A Lorence.
2. Invited talk, Phenomics Workshop, Plant and Animal Genome Conference, San Diego, CA, January 12-16, 2013. "High throughput Plant Phenotyping at the Arkansas Plant Powered Production Center" R Torres, J Yactayo-Chang, J Martin, R Gaxiola, A Lorence.
3. Seminar (Siddique I Aboobucker and A Lorence), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, October 19, 2012. "Characterization of an *Arabidopsis* L-gulono-1,4-lactone oxidase (GulLO)" S Aboobucker, WP Suza, A Lorence. "Keys to successful phenotyping experiments using the Scanalyzer HTS" R Torres and A Lorence.
4. Invited talk, ASSET Management Team Meeting Report, Little Rock, AR (participated via WebEx conference), October 15, 2012. "Scanalyzer HTS, a powerful high throughput plant phenotyping platform" A Lorence.

5. Plenary Talk (invited) 51th Annual Meeting of the Phytochemical Society of North America, Aug 11-15, 2012, London, Ontario "Engineering elevated vitamin C in plants to improve their nutritional content, growth, and tolerance to stress. Lorence A.
6. Invited (K Lisko*) 3rd Annual Conference of the American Council for Medicinally Active Plants, May 22-25, 2012, Jonesboro, AR. "Engineering Rice for Elevated Vitamin C Content" Lisko KA, Wilson GA, Underwood J, Srivastava V, Hubstenberger J, Phillips GC, Lorence A.
7. Invited (SI Aboobucker*) 3rd Annual Conference of the American Council for Medicinally Active Plants, May 22-25, 2012, Jonesboro, AR. "Characterization of a functional *Arabidopsis* L-gulono-1,4-lactone oxidase (GLOase) in *Nicotiana benthamiana*", Aboobucker SI, Suza WP, Lorence A.
8. Seminar (S Kulkarni*), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, March 30, 2012. "Elevating ascorbate content in tomato and studying the role of jasmonates in modulating ascorbate in *Arabidopsis"* S Kulkarni and A Lorence.
9. Invited talk, Career Day for Biomedical Sciences, UAMS, Little Rock, AR, October 13, 2011. "I like the student/mentoring interactions better than the benchwork: A career in an undergraduate university"
10. Seminar (J Yactayo-Chang*), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, September 23, 2011. "Stable co-expression of vitamin C enhancing genes for improved expression of a recombinant therapeutic protein, hIL12, in *Arabidopsis thaliana"* J Yactayo-Chang*, MC Dolan and A Lorence.
11. Invited talk, *Instituto de Biotecnología* (IBT), *Universidad Nacional Autónoma de México*, Cuernavaca, Mexico, June 27, 2011 "Vitamin C in Plants: Metabolism and Functions of a Multifacetic Molecule"
12. Invited talk, Visit to ASU of Dr. Catherine Woteki, Under Secretary for Research, Education, and Economics at the U.S. Department of Agriculture, Jonesboro, AR, February 17, 2011. "Metabolic engineering of vitamin C in plants: Implications for agriculture, nutrition, plant-based protein production and phytoremediation"
13. Seminar (S Kulkarni and S Aboobucker), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, February 4, 2011. "Engineering elevated vitamin C levels in tomato by over-expression of AtMIOX4 and AtGlcUR" S. Kulkarni, W Suza, FL Goggin and A Lorence. "Characterization of two GLOases in Arabidopsis". S Aboobucker, W Suza and A Lorence.
14. Invited talk, VII *Encuentro Latinoamericano y del Caribe Sobre Biotecnología Agropecuaria*, RedBIO Mexico 2010, Guadalajara, Mexico, November 1-5, 2010. "Engineering elevated levels of vitamin C in plants: Implications for agriculture, plant-based protein production and phytoremediation"
15. Invited talk, Seminar Series of the Department of Microbiology and Immunology, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR, October 7, 2010. "Manipulating vitamin C content in plants: Implications for plant senescence, agriculture and phytoremediation"
16. Invited talk (K Gilbert), ABI Fall Research Symposium, Little Rock, AR, September 29, 2010. "Environmental pollutants as triggers of autoimmune disease: Collaborative research into mechanism of action and remediation" K Gilbert, S Blossom, H Gomez-Acevedo, C Cooney, N Plumford, A Lorence, F Medina-Bolivar.
17. Seminar, Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, September 3rd, 2010. "Plant DNA Barcodes"
18. Seminar (A Lorence and MC Dolan), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, April 30, 2010. Update on "Role of ascorbate in

mitigating ER and cellular stress associated with transient and stable plant-based protein production"

19. Seminar (KA Lisko*, G Trujillo-Luján* and SI Aboobucker*), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, April 2, 2010. "Ontogenetic changes in vitamin C in selected rice varieties" KA Lisko*, JF Hubstenberger, HB Belefant-Miller, GC Phillips, and A Lorence, and "Leveraging Genevestigator data to better understand how the vitamin C metabolic network is regulated" WP Suza*, G. Trujillo-Luján*, SI Aboobucker*, and A Lorence.
20. Seminar (S Kulkarni*, WP Suza*), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, November 6, 2009. "Intersection of Ascorbate Regulation, Jasmonate-Signaling, and Defense Against Herbivores in Plants: An update"
21. Invited talk presented at the Dale Bumpers USDA National Rice Research Center, October 8, 2009, Stuttgart, AR "Vitamin C in Plants: Metabolism and Functions of a Multifaceted Molecule"
22. Invited talk, Symposium "Rice Research in Arkansas", August 5, 2009, Little Rock, AR "Vitamin C metabolism in rice varieties of importance to Arkansas"
23. Invited talk, NSF EPSCoR P3 Center and the P3 Technical Advisory Committee (TAC) Meeting, April 2, 2009, Little Rock, AR. "Progress Report: Role of Ascorbate in Mitigating ER and Cellular Stress Associated with Transient and Stable Plant-Based Protein Production" A Lorence, M Dolan and V Srivastava.
24. Invited talk, NSF EPSCoR P3 Center and the P3 Technical Advisory Committee (TAC) Meeting, April 2, 2009, Little Rock, AR. Progress Report on: Intersection of Ascorbate Regulation, Jasmonate-Signaling, and Defense Against Herbivores in Plants" A Lorence and F Goggin.
25. Invited talk (to FG), 80th Annual Meeting of the Entomological Society of America Eastern Branch, Harrisburg, PA, March 20-23, 2009. "Vitamin C: A cure for the common caterpillar" C Avila, W Suza*, A Lorence and F. Goggin.
26. Seminar (G Trujillo*, RS Harris*, G Wilson*), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, January 23, 2009. "Progress in the study of the inositol pathway to vitamin C in plants".
27. Invited talk, Symposium "Biofuels and Plant Produced Products", Worcester Polytechnic Institute, Worcester, MA, October 27, 2008. "The many reasons why plants also need their vitamin C".
28. Invited talk, Arkansas Biosciences Institute Fall Research Symposium, Science and Industry Advisory Committee Meeting, Little Rock, AR, October 7, 2008. "Leveraging vitamin C metabolism to develop plants that are better for us and the environment"
29. Invited talk, Arkansas NSF EPSCoR Annual Meeting, Little Rock, AR, October 7, 2008. "Phytoremediation and Ecological Engineering in Arkansas: Challenges and Opportunities"
30. Invited talk (to FG) presented presented at the Arkansas NSF EPSCoR Annual Meeting, Little Rock, AR, October 6, 2008. "Intersection of Ascorbate Regulation, Jasmonate-Signaling, and Defense Against Herbivores in Plants" F Goggin and A Lorence.
31. Invited talk (to MD), Arkansas NSF EPSCoR Annual Meeting, Little Rock, AR, October 6, 2008. "Role of Ascorbate in Mitigating ER and Cellular Stress Associated with Transient and Stable Plant-Based Protein Production" M Dolan, V Srivastava and A Lorence.
32. Seminar (A Lorence, G Trujillo*, SI Aboobucker*, KA Lisko*, and W Suza), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, September 19, 2008. "Progress in the study of the inositol pathway to vitamin C in plants".
33. Invited talk, Pan American Symposium Mexico 2008 "Pharmaceutical environment for students in pharmacy: current and future perspectives", event organized by the Pan American Regional Office of the International Pharmaceutical Student's Federation,

September 8-11, 2008, Cuernavaca, Morelos, Mexico. “Progress in the study and manipulation of vitamin C biosynthesis in plants”.

34. Invited talk, state wide Arkansas EPSCoR P3 Training Conference, August 20-22, 2008 Petit Jean, AR. “The 101 in how to mine the Arabidopsis TAIR database”.
35. Invited talk, scholars of the NSF-funded Research Internships in Science of the Environment (RISE), July 22, 2008, Arkansas State University, Jonesboro, AR. “The importance of networking”.
36. Invited talk, World Congress on In Vitro Biology, Society for In Vitro Biology, Tucson, AZ, June 14-18, 2008. “Engineering ascorbate for enhanced growth, nutritional content, and stress tolerance in crops” KA Lisko*, RS Harris*, J Yactayo-Chang* and A Lorence.
37. Oral presentation (G Wilson*), April 10, 2008, Undergraduate Scholar’s Day Conference, ASU, Jonesboro, AR. “Identification and cloning of glucuronolactonases of *Arabidopsis thaliana*” G Wilson*, G Trujillo*, M Belisle*, A Lorence.
38. Oral presentation (G Trujillo*), April 9, 2008, Graduate Scholar’s Day Conference, ASU, Jonesboro, AR. “Spatial and temporal expression patterns of genes in the *myo*-inositol pathway to ascorbate in *Arabidopsis thaliana”* G Trujillo* and A Lorence.
39. Oral presentation (SI Aboobucker*), April 9, 2008, Graduate Scholar’s Day Conference, ASU, Jonesboro, AR. “Identification and characterization of a functional L-gulono-1,4-lactone oxidase in *Arabidopsis”* SI Aboobucker* and A Lorence.
40. Seminar (KA Lisko*, RS Harris*, G Trujillo* and SI Aboobucker*), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, March 7, 2008. “Vitamin C biosynthesis in plants: An unfolding story” KA Lisko*, RS Harris*, G Trujillo*, SI Aboobucker*, and A Lorence.
41. Invited talk, Department of Entomology, University of Arkansas Fayetteville, January 29, 2008. “Vitamin C biosynthesis in plants: An unfolding story” A Lorence.
42. Seminar (M Belisle*, RS Harris*, J Yactayo*, and A Lorence), Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, Jonesboro, AR, October 12, 2007. “Engineering vitamin C and taxanes levels in plants: An update” KA Lisko*, G Trujillo*, G Wilson*, M Belisle*, RS Harris*, F Crawford, J Yactayo*, F Bestoso*, and A Lorence.
43. Invited talk (to F Medina-Bolivar), 2007 Phytochemical Society of North America Annual Meeting, July 21-25, 2007, St. Louis, MO. “Thichloroethylene induces stilbenoid compounds and antioxidant activity in peanut roots”. F Medina-Bolivar, C Nopo-Olazabal, S Ganapathy, L Nopo-Olazabal, R Hannigan, K Redeker, A Lorence, C Purnell, RS Harris*, and S Simeon*.
44. Invited talk, scholars of the NSF-funded Research Internships in Science of the Environment (RISE), Arkansas State University, Jonesboro, AR. Topic: “The importance of networking”. July 24, 2007.
45. Oral presentation (G Wilson), McNair Scholars 2007 Summer Research Symposium, July 25-26, 2007, Jonesboro, AR “Glucuronolactonase, a gene family encoding enzymes involved in vitamin C biosynthesis and degradation”. GA Wilson*, G Trujillo-Luján*, M Belisle*, and A Lorence.
46. KEYNOTE ADDRESS INVITED (C Cramer), XII National Congress of Biotechnology and Bioengineering, Mexican Society of Biotechnology and Bioengineering, June 25-29, 2007, Morelia, Mexico. “Biotechnology at the interface of agriculture and medicine”. C Cramer, M Dolan, A Lorence, F Medina-Bolivar and P Weathers.
47. Invited talk (L Offenbach) ,17th Annual World Symposium, International Food and Agribusiness Management Association, June 23-26 2007, Parma, Italy. “Fruits and vegetable consumption among college students in Arkansas and Florida: food culture versus health knowledge” C Schroeter, L Offenbach and A Lorence. Nominated to *Best Paper Award* in Agribusiness Symposium.

48. Invited talk, National Council of Science, Technology and Innovation (*Secretaría Nacional de Ciencia, Tecnología e Innovación, SENACYT)* and Institute of Advanced Scientific Reseach and High Technology Services (*Instituto de Investigaciones Científicas Avanzadas y Servicios de Alta Tecnología, INDICASAT)*, Panama, Panama, June 7, 2007. "Manipulation of the vitamin C content in plants: Implications for human health, agriculture and environment". A Lorence.
49. Seminar, Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, April 13, 2007, Jonesboro, AR. "An update in the science of vitamin C" G Trujillo*, G Wilson*, K Lisko*, RS Harris*, S Simeon*, J Yactayo* and A Lorence.
50. Invited talk, University of Arkansas at Little Rock, Biosciences and Bioinformatics Spring Seminar Series, Little Rock, AR, February 12, 2007. "Engineering vitamin C levels in plants: New roles for an old molecule". A Lorence.
51. Invited talk, Symposium on Biological, Chemical Defense and Homeland Security, 2006 International Conference on Bio and Pharmaceutical Science and Technology (ICBPST), San Diego, CA, Dec 18-21, 2006. "Harnessing the potential of plant genomics in detection and remediation of explosives and chemical weapons" RS Harris*, T Moss, R Hannigan, and A Lorence.
52. Seminar, Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, October 20th, 2006, Jonesboro, AR. "The role of ascorbate in coordinating growth and senescence in *Arabidopsis thaliana*: an update" A Lorence.
53. Seminar, POI Aging Work Group at UAMS, October 5th, 2006, Little Rock, AR. "The role of ascorbate in coordinating growth and senescence in *Arabidopsis thaliana*: an update" A Lorence.
54. Invited talk, scholars of the NSF-funded Research Internships in Science of the Environment (RISE), Arkansas State University, Jonesboro, AR. Topic: "The importance of networking". July 20, 2006.
55. Invited talk, Phytochemical Society of North America Meeting, July 8-12, 2006, Oxford, MS. "Enhanced production of specialized metabolites in tobacco over-expressing an AP2-type transcription factor". A Lorence, BJ Woffenden, J Martínez-Quintana*, L Nopo-Olazabal, CL Nessler, and F Medina-Bolivar.
56. Seminar, Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, July 7, 2006, Jonesboro, AR. "What is an ORCA doing in my tobacco?" A Lorence.
57. Seminar, POI Aging Work Group at UAMS, June 1st, 2006, Little Rock, AR. "Role of ascorbate in coordinating growth and senescence in *Arabidopsis thaliana*" A Lorence.
58. Seminar, Plant Biotechnology Discussion Group, Arkansas Biosciences Institute, May 26, 2006, Jonesboro, AR. "Synopsis of Symposium: RNA Biology – Novel Insights from Plants" A Lorence.
59. Invited talk, American Chemical Society Student Meeting, Arkansas State University, October 14, 2005, Jonesboro, AR. "Vitamin C, a master nutrient for humans and a crossroad in plant biochemistry" A Lorence.
60. Invited talk presented at the Department of Chemistry, University of Memphis, September 30, 2005, Memphis, TN. "Vitamin C biosynthesis in plants, a tale of many routes" A Lorence.
61. Invited talk (to F Medina-Bolivar), 2005 Meeting of the Phytochemical Society of North America "Integrative Plant Biochemistry as We Approach 2010" July 30 – August 3, 2005, Salk Institute, CA. "Over-expression of transcription factors to manipulate specialized metabolite biosynthesis" A Lorence, BJ Woffenden, M Smith, CL Nessler, and F Medina-Bolivar.
62. Invited talk (to CL Nessler), 2005 *In Vitro* Biology Meeting, June 5-7, 2005, Baltimore, MD "The vitamin C network – new branches in plant biochemistry" CL Nessler, A Lorence, BI Chevone and P Mendes.

63. Invited talk, 2nd National Meeting of Chemistry of Natural Products, "Dr. Alfonso Romo de Vivar Romo", May 25-28, 2005, Cocoyoc, Mexico "Manipulation of the metabolic network of vitamin C for the production of plants with enhanced properties" A Lorence, BI Chevone, P Mendes and CL Nessler.
64. Invited talk, Clemson University, May 16th, 2005, Clemson, SC,. "Manipulating the vitamin C metabolic network for the nutritional and agronomical enhancement of plants" A Lorence.
65. Invited talk, Arkansas Biosciences Institute (ABI), Arkansas State University (ASU), April 21st, 2005, Jonesboro, AR. "Manipulating the vitamin C metabolic network for the nutritional and agronomical enhancement of plants" A Lorence.
66. Invited talk presented at University of Texas – San Antonio (UTSA), April 14th, 2005, San Antonio, TX. "Manipulating the vitamin C metabolic network for the nutritional and agronomical enhancement of plants" A Lorence.
67. Invited talk presented at Polytechnic University, March 4th, 2005, Brooklyn, NY. "Manipulating the vitamin C metabolic network for the nutritional and agronomical enhancement of plants" A Lorence.
68. AWARD ADRESS Arthur Neish Young Investigator Symposium Speaker, 2002 Annual Meeting, Phytochemical Society of North America (PSNA). July 20-24, 2002, Mérida, México "Holes in the membranes: how allelochemicals in the morning glory family dispose of enemies?" A Lorence, R Villatoro-Vera*, and R Pereda-Miranda.
69. Invited talk, Molecular Biology Seminar Series, CINVESTAV- Irapuato, March 20, 2002, Irapuato, México, "The relationship between ORCAs and the joy tree" A Lorence.
70. Invited talk, *CEIB, UAEM*, December 13, 200, Cuernavaca, México,. "Metabolic engineering of medicinal plants" A Lorence.
71. Invited talk, 1St Engineering Congress, *Universidad Iberoamericana*, September 20, 2000, Mexico City, México. "Applications of molecular biology and biotechnology" A Lorence.
72. Invited talk presented at the Morelos Delegation of the Mexican Society of Biotechnology and Bioengineering, October 22, 1999, Cuernavaca, México. "Introduction of insect-resistant corn in Mexico". A Lorence and R. Quintero.
73. Invited talk presented at *Centro de Investigación Biomédica del Sur/IMSS*, October 21, 1999, Xochitepec, México. "Evaluation of the socio-economical impact of the introduction of *Bt* corn to Mexico" A Lorence and R Quintero.
74. Invited talk presented at the Molecular Biology Seminar Series, CINVESTAV- Irapuato, July 9, 1999, Irapuato, México. "The mechanism of action of *Bacillus thuringiensis* Cry proteins: implications for the management of *Bt* corn in Mexico" A Lorence and R Quintero.
75. Invited talk presented at the International Symposium "Modern strategies for contamination control and development of clean technologies", *Instituto de Ecología*, March 11-13, 1996, Boca del Río, México. "In search of novel and better bioinsecticides" A Lorence and R Quintero.
76. Invited talk, 5th Week of Scientific Research, CONACYT and UAEM, April 1994, Cuautla, México. "Alternatives to chemical pest control". A Lorence and R Quintero.
77. Invited talk, V Congress of Biotechnology and Bioengineering, September 1993, Puerto Vallarta, México,. "Basic elements for the development and diffusion of biotechnology in Mexico, a comparative analysis" A Lorence, RL Gonzalez, and JL Solleiro.
78. Invited talk, *Instituto de Investigaciones Económicas (UNAM), Instituto de Investigaciones Sociales (UNAM)* and *Departamento de Sociología (UAM-A)*, November 25-27, 1991Mexico City, México. "Feasibility study of the production and commercialization of insect-resistant tomato seeds" A Lorence, and H Rojas.

Discussion Panels

1 INVITED, Lorence A, Benjamin E, and Schroer J, panelist who participated in the discussion "The Minority Under-represented Experience as a Faculty Member" for students participating

in the 2008 NSF-funded Research Internships in Science of the Environment (RISE), Arkansas State University, Jonesboro, AR, July 25, 2008.

Posters

1. Create@StAte, A Symposium of Research and Scholarship, Arkansas State University, April 11, 2013, Jonesboro, AR. " All four biosynthetic pathways leading to vitamin C formation are active in tomato*"* Tatambhotla SV*, Aboobucker SI, Suza WP, Lorence A.
2. NSF Bioinformatics Workshop to Foster Collaborative Research, March 3-5 2013, Little Rock, AR "Phenomics at the Arkansas Center for Plant Powered Production" R Torres, J Martin, J Yactayo-Chang, R Gaxiola, A Lorence.
3. ABI 2012 Fall Symposium October 23, 2012, Fayetteville, AR. "The Scanalyzer HTS, a powerful platform for non-destructive plant phenotyping" JP Yactayo-Chang*, R Torres, J Martin*, R Gaxiola, A Lorence.
4. Fall 2012 INBRE –Research Conference, University of Arkansas, October 5-6, 2012, Fayetteville, AR "All four biosynthetic pathways leading to vitamin C formation are active in tomato" SV Tatambhotla*, SI Aboobucker*, WP Suza, A Lorence.
5. Fall 2012 INBRE –Research Conference, University of Arkansas, October 5-6, 2012, Fayetteville, AR. "Effects of exogenously applied abscisic acid in modulating foliar ascorbate content in *Arabidopsis thaliana"* JR Radin*, WP Suza, J Yactayo-Chang*, FL Goggin, A Lorence.
6. 3rd Annual Conference of the American Council for Medicinally Active Plants, May 22-25, 2012, Jonesboro, AR. "Stable co-expression of vitamin C enhancing genes for improved production of a recombinant therapeutic protein, hIL12, in *Arabidopsis thaliana*" JP Yactayo-Chang*, MC Dolan, Lorence A.
7. 3rd Annual Conference of the American Council for Medicinally Active Plants, May 22-25, 2012, Jonesboro, AR "Optimizing recombinant protein yield in an A*grobacterium*-mediated transient expression system" Ayala J, Medrano G, Condori J, Acosta W, Fergus R, Rubio N, Behrens E, Flory A, Radin D, Lorence A, Dolan MC, Cramer CL.
8. Meeting to celebrate Prof. Robert Verpoorte's academic career, Leiden, Netherlands, April 2012. "DNA barcoding of the Mexican sedative plant *Galphimia glauca"* Sharma A, Folch Mallol JL, Cardoso-Taketa A, Lorence A, Villarreal ML.
9. Create@StAte, A Symposium of Research and Scholarship, Arkansas State University, April 5, 2012, Jonesboro, AR. "Effects of exogenously applied abscisic acid in modulating foliar ascorbate content in *Arabidopsis thaliana"* Radin JA*, Suza WP, Goggin FL, Lorence A. ***J Radin won 2nd place for best undergraduate student poster***
10. Create@StAte, A Symposium of Research and Scholarship, Arkansas State University, April 5, 2012, Jonesboro, AR. "Pyramiding H^+-pyrophosphatase and *myo*-inositol oxygenase to enhance plant growth and stress tolerance in *Arabidopsis*" Martin J*, Yactayo-Chang J*, Gaxiola R, Lorence A.
11. Annual Meeting of the Consortium for Plant Biotechnology Research, March 6-7, 2012, Washington, D.C. "Vitamin C to increase yields of *Camelina* and *Miscanthus*" Phillips G, Lorence A, Green S.
12. 2012 Rice Technical Working Group, February 27 – March 1st, 2012, Hot Springs, AR. "Engineering Rice for Elevated Vitamin C Content" Lisko KA, Wilson GA, Hubstenberger JF, Underwood J, Srivastava V, Phillips GC, and Lorence A.
13. 2011 Annual Biomedical Research Conference for Minority Students, November 9-12, 2011, St. Louis, MO "*Myo*-Inositol oxygenase expression in tobacco leads to plants with enhanced biomass and vitamin C content" G Rodriguez-Gonzalez. CL Nessler, and A Lorence. G

Rodriguez-Gonzalez won best poster awards in two categories: cell biology and interdisciplinary research.

14. 2011 SE Regional IDeA Meeting, September 22-24, 2011, New Orleans, LA. "Pyramiding expression of a H^+-pyrophosphatase and an inositol oxygenase to enhance plant growth and stress tolerance in *Arabidopsis"* J Martin*, J Yactayo-Chang*, R Gaxiola and A Lorence.
15. ABI 2011 Fall Symposium September 21, 2011, Little Rock, AR. "Phytoremediation potential of morning glory and lupin species" G Wilson*, R Torres*, RS Harris*, K Gilbert and A Lorence.
16. 2011 P3 Annual Meeting, July 26-28, 2011, Hebert Springs, AR. "Stable co-expression of vitamin C enhancing genes for improved expression of a recombinant therapeutic protein, hIL12, in *Arabidopsis thaliana"* J Yactayo-Chang*, MC Dolan and A Lorence.
17. 13th International Lupins Conference, June 6-10, 2011, Poznan, Poland. "Domesticated and wild lupins accumulate elevated foliar ascorbate levels" R Torres*, J Yactayo-Chang*, PM García-López, CM Gurrola-Díaz, and A Lorence.
18. 2011 In Vitro Biology Meeting, Society for In Vitro Biology, June 4-8, 2011, Raleigh, NC. "Screening Rice Cultivars for Elevated Vitamin C Content" K Lisko*, JF Hubstenberger, H Belefant-Miller, GC Phillips, WG Yan, A McClung, and A Lorence.
19. 2011 In Vitro Biology Meeting, Society for In Vitro Biology, June 4-8, 2011, Raleigh, NC. "Ascorbate regulation in *Arabidopsis* jasmonate, abscisic acid and ethylene mutants" J Radin*, WP Suza*, FL Goggin and A Lorence.
20. Create@StAte, A Symposium of Research and Scholarship, Arkansas State University, March 29, 2011, Jonesboro, AR. "Characterization of an *Arabidopsis* Gluconolactonase Involved in Ascorbate Biosynthesis" G Trujillo-Luján*, G Wilson*, D Lewis*, and A Lorence.
G Trujillo-Lujan won 2nd place for best graduate student poster in the STEM category
21. Create@StAte, A Symposium of Research and Scholarship, Arkansas State University, March 29, 2011, Jonesboro, AR. "Identification and Characterization of a Functional L-Gulono-1,4-lactone Oxidase in Arabidopsis" SI Aboobucker*, WP Suza* and A Lorence.
22. Create@StAte, A Symposium of Research and Scholarship, Arkansas State University, March 29, 2011, Jonesboro, AR. "Ontogenetic changes of vitamin C in rice" KA Lisko*, JF Hubstenberger, H Belefant-Miller, G Phillips and A Lorence.
23. Create@StAte, A Symposium of Research and Scholarship, Arkansas State University, March 29, 2011, Jonesboro, AR. "Development of high-vitamin C tomatoes" S Kulkarni*, WP Suza*, FL Goggin and A Lorence.
24. Create@StAte, A Symposium of Research and Scholarship, Arkansas State University, March 29, 2011, Jonesboro, AR. "Can vitamin C enhance the accumulation of a model human protein in stable transgenics? J Yactayo-Chang*, MC Dolan and A Lorence.
25. Create@StAte, A Symposium of Research and Scholarship, Arkansas State University, March 29, 2011, Jonesboro, AR. "Selected members of the *Lupinus* genus accumulate elevated levels of vitamin C" R Torres*, J Yactayo-Chang*, C Gurrola-Diaz, P Garcia, and A Lorence.
26. Fall 2010 INBRE –Research Conference, University of Arkansas, October 15-16, 2010, Fayetteville, AR." Ascorbate regulation in *Arabidopsis* jasmonate, ethylene, and abscisic acid mutants" JA Radin*, WP Suza*, FL Goggin and A Lorence.
27. ABI 2010 Fall Symposium September 29, 2010, Little Rock, AR. "Leveraging Genevestigator data to better understand how the vitamin C network is regulated" WP Suza*, G Trujillo-Luján*, SI Aboobucker*, and A Lorence.
28. EPSCoR P3 Meeting, August 15-17, 2010, Petit Jean, AR."Role of plant-derived ascorbate in plant-herbivore interactions" C Avila, K Carruthers, W Suza, A Lorence and F Goggin.
29. EPSCoR P3 Meeting, August 15-17, 2010, Petit Jean, AR. "Using antioxidants to improve recombinant protein production in transient and stable plant-based bioproduction platforms" G Medrano, N Rubio*, J Yactayo-Chang*, V Srivastava, MC Dolan, and A Lorence.

30. EPSCoR P3 Meeting, August 15-17, 2010, Petit Jean, AR. *"*Over-expression of ascorbate biosynthesis genes for improved protein production and stress tolerance in rice" J Underwood, GA Wilson*, N Rubio*, G Medrano, MC Dolan, V Srivastava, and A Lorence.
31. EPSCoR P3 Meeting, August 15-17, 2010, Petit Jean, AR. "Engineering elevated vitamin C in tomato for enhanced growth and stress tolerance" S Kulkarni*, WP Suza*, J Yactayo-Chang*, MV Khodakovskaya, FL Goggin and A Lorence.
32. EPSCoR P3 Meeting, August 15-17, 2010, Petit Jean, AR. "Screening rice cultivars for elevated vitamin C content" KA Lisko*, JF Hubstenberger, HB Belefant-Miller, GC Phillips, and A Lorence.
33. 2010 Poster Competition of the George Washington Carver Research Program, July 7, 2010, Fayetteville, AR. "Identification of Arabidopsis MIOX4 over-expressing lines with high vitamin C content" K Potts, A Lorence and FL Goggin. ***Kiara Potts won best poster competition***.
34. 35th International Symposium on High Performance Liquid Phase Separations and related Techniques (HPLC 2010), June 19-24, 2010, Boston, MA. "Simultaneous determination of key vitamin C precursors using liquid chromatography- electrospray ionization mass spectrometry" VDP Nair, KA Lisko*, and A Lorence.
35. NIH, NCRR Third Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), June 16-18, 2010, Bethesda, MD. "Characterization of an *Arabidopsis* gluconolactonase involved in ascorbate biosynthesis" G Trujillo-Luján*, G Wilson*, and A Lorence.
36. IAPB/SIVB Meeting, June 6-11, 2010, St. Louis, MO. "Using antioxidants to improve recombinant protein production in transient and stable plant-based bioproduction platforms" G Medrano, N Rubio, J Yactayo-Chang, V Srivastava, MC Dolan, and A Lorence.
37. Water for Food: Growing More with Less, Second Annual International Conference, May 2-5, 2010, Lincoln, NE. "Exploring the role of sterols in the plant's response to drought stress" K Quatermous, A Lorence, and WP Suza*. ***WP Suza winner of the "outstanding poster" after judged competition.***
38. 33rd Meeting of the Rice Technical Working Group, February 22-25, 2010, Biloxi, MS. "Over-expression of ascorbate biosynthesis genes for improved protein production and stress tolerance in rice" J Underwood, GA Wilson*, N Rubio, G Medrano, MC Dolan, V Srivastava, and A Lorence.
39. 33rd Meeting of the Rice Technical Working Group, February 22-25, 2010, Biloxi, MS. "Ontogenetic changes in vitamin C in selected rice varieties" KA Lisko*, JF Hubstenberger, HB Belefant-Miller, GC Phillips, and A Lorence.
40. 2010 Conference of the MidSouth Computational Biology and Bioinformatics Society (MCBIOS), February 19-20, 2010, Jonesboro, AR "Leveraging Genevestigator data to better understand how the vitamin C network is regulated" Suza WP*, Trujillo-Luján G*, Aboobucker S*, and Lorence A.
41. 9th International Plant Molecular Biology Congress, October 25-30, 2009, St. Louis, MO. "Metabolic engineering of vitamin C in tomato via over-expression of genes in the *myo*-inositol pathway**"** S Kulkarni*, WP Suza*, F Goggin, and A Lorence.
42. 9th International Plant Molecular Biology Congress, October 25-30, 2009, St. Louis, MO. "Characterization of an Arabidopsis glucuronolactonase involved in ascorbate metabolism". G Trujillo-Luján*, G Wilson*, and A Lorence.
43. 9th International Plant Molecular Biology Congress, October 25-30, 2009, St. Louis, MO. "Identification and characterization of a functional L-gulono-1,4-lactone oxidase in Arabidopsis". SI Aboobucker*, WP Suza*, and A Lorence
44. 9th International Plant Molecular Biology Congress, October 25-30, 2009, St. Louis, MO. "Influence of mechanical wounding on ascorbate metabolism in Arabidopsis and tomato" WP Suza*, C Avila, K Carruthers, F Goggin, and A Lorence.

45. 9th International Plant Molecular Biology Congress, October 25-30, 2009, St. Louis, MO. "Role of plant-derived ascorbate in plant-herbivore interactions" C Avila, K Carruthers, WP Suza*, A Lorence, and F Goggin.
46. 9th International Plant Molecular Biology Congress, October 25-30, 2009, St. Louis, MO. "Over-expression of ascorbate biosynthesis genes for improved protein production in rice cells" J Underwood, G Wilson*, MC Dolan, V Srivastava, and A Lorence.
47. 9th International Plant Molecular Biology Congress, October 25-30, 2009, St. Louis, MO. "Strategies for improving recombinant protein expression in transient and stable plant-based bioproduction platforms" G Medrano*, N Rubio*, J Radin*, V Srivastava, A Lorence and MC Dolan.
48. 2009 Arkansas NSF EPSCoR Annual Conference, October 1-2, 2009, Little Rock, AR. "Influence of modified ascorbate metabolism in plants on an herbivorous insect". C Avila, K Carruthers, WP Suza*, A Lorence and FL Goggin. ***K Carruthers winner best graduate student poster***.
49. 2009 Arkansas NSF EPSCoR Annual Conference, October 1-2, 2009, Little Rock, AR. "Effect of mechanical wounding on ascorbate metabolism in Arabidopsis and tomato" WP Suza*, S Kulkarni*, C Avila, K Carruthers, F Goggin, and A Lorence. ***S Kulkarni winner best graduate student poster.***
50. ABI 2009 Fall Symposium September 25, 2009, Jonesboro AR. "Major sterols of flowering and non-flowering plants and their proportions in plants experiencing drought" K Quatermous, A Lorence, and WP Suza*.
51. RISE Scholars 2009 Summer Research Symposium, August 6, 2009, Jonesboro, AR. "Major sterols of flowering and non-flowering plants and their proportions in plants experiencing drought" K Quatermous, A Lorence, and WP Suza*.
52. 2009 Society for In Vitro Biology Annual Meeting, June 6-10, 2009, Charleston, SC. "DMSO stimulates production of artemisinin and also suggesting that the sesquiterpene may function as a ROS sink in *Artemisia annua*" PJ Weathers, A Mannan , CZ Liu, MJ Towler, D Vail, and A Lorence.
53. 23rd National Conference on Undergraduate Research (NCUR), April 18, 2009, LaCrosse, WI. "Impact of introducing ascorbate in transient plant-based bioproduction of recombinant proteins with therapeutic utility" EM Fawcett*, J Ayala, A Lorence, and MC Dolan.
54. NSF EPSCoR P3 Center and the P3 Technical Advisory Committee (TAC) Meeting, April 2, 2009, Little Rock, AR. "Enhancing recombinant protein expression by modulating cellular antioxidant levels on both transient and stable plant-based production platforms" G Medrano, J Radin*, N Rubio, A Lorence and MC Dolan.
55. Fall 2008 INBRE – Undergraduate Research Conference, University of Arkansas, November 7-8, 2008, Fayetteville, AR. "A holistic approach to understand the roles of vitamin C in plant physiology and development" J Yactayo-Chang*, G Trujillo*, SI Aboobucker*, K Lisko*, RS Harris*, A Parbatani*, S Kulkarni*, G Wilson*, J Radin*, WP Suza, and A Lorence.
56. Fall 2008 INBRE – Undergraduate Research Conference, University of Arkansas, November 7-8, 2008, Fayetteville, AR. "Phytoremediation potential of plants with elevated vitamin C content" RS Harris*, G Wilson*, J Radin*, WP Suza and A Lorence.
57. ABI 2008 Fall Symposium October 7, 2008, Little Rock, AR. "Identification and characterization of a functional L-gulono-1,4-lactone oxidase in Arabidopsis" S Aboobucker*, WP Suza and A Lorence.
58. NSF EPSCoR Annual Meeting Poster Session, Little Rock, AR, October 6, 2008. "Insect defense and recombinant protein production in plants in the realm of ascorbate metabolism" W Suza, G Medrano, J Yactayo-Chang*, A Parbatani*, J Underwood, V Srivastava, F Goggin, MC Dolan and A Lorence.

59. Cotton Field Day, Judd Hill Foundation, August 28, 2008, Truman, AR. “Vitamin C is essential not only for human health, but also for cotton growth and stress tolerance” K Lisko*, RS Harris*, R Buchanan, and A Lorence.
60. Arkansas EPSCoR P3 Training Conference, August 20-22, 2008 Petit Jean, AR. “Leveraging Arabidopsis genetic resources to identify a functional glucuronolactonase” G Trujillo-Lujan*, G Wilson* and A Lorence.
61. Arkansas EPSCoR P3 Training Conference, August 20-22, 2008 Petit Jean, AR. “Study of ascorbic acid capacity in *Nicotiana* species” C Willis*, J Yactayo-Chang*, MC Dolan and A Lorence.
62. Arkansas EPSCoR P3 Training Conference, August 20-22, 2008 Petit Jean, AR. “Harnessing the power of vitamin C for enhancing human and plant health” K Lisko*, RS Harris*, F Crawford*, J Yactayo* and A Lorence.
63. 2nd Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), August 6-8, 2008, Washington, DC. “Elevated vitamin C enhances growth, stress tolerance and phytoremediation potential in Arabidopsis” K Lisko*, RS Harris* and A Lorence. ***K Lisko won a Student Travel Award from NISBRE.***
64. 2nd Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), August 6-8, 2008, Washington, DC. “Leveraging Arabidopsis Genetic Resources to Identify a Functional Glucuronolactonase” G Trujillo-Lujan*, G Wilson* and A Lorence.
65. RISE Scholars 2008 Summer Research Symposium, August 7, 2008, Jonesboro, AR. “Study of Ascorbic Acid Capacity in the *Nicotiana* Species” C Willis*, J Yactayo-Chang*, MC Dolan and A Lorence.
66. RISE Scholars 2008 Summer Research Symposium, August 7, 2008, Jonesboro, AR. “Impact of introduction of vitamin C in transient recombinant RTB fusion protein expression” E Fawcett*, J Ayala, MC Dolan, and A Lorence.
67. Poster Competition, Departments of Biology and Biotechnology and Chemistry and Biochemistry, Worcester Polytechnic Institute, April 15, 2008, Worcester, MA. “Cloning and characterization of two putative glucuronolactonases from *Arabidopsis thaliana* involved in ascorbate degradation” M Belisle*, G Wilson*, G Trujillo* and A Lorence.
68. Fall 2007 INBRE – Undergraduate Research Conference, University of Arkansas, November 9-10, 2007, Fayetteville, AR. “Exploring the plasticity of the *myo*-inositol pathway to vitamin C in plants” G Trujillo*, G Wilson*, M Belisle*, S Imran-Aboobucker*, J Yactayo*, S Simeon* and A Lorence. ***G Wilson got a Travel Award from the Honors College at ASU.***
69. Fall 2007 INBRE – Undergraduate Research Conference, University of Arkansas, November 9-10, 2007, Fayetteville, AR. “Harnessing the power of vitamin C for enhancing human and plant health” K Lisko*, RS Harris*, F Crawford*, J Yactayo* and A Lorence.
70. Einstein’s in the City 2 International Students Research Conference 2007, City College of New York, October 30-31, 2007, New York, NY. “Mustards for better human health and a cleaner environment” F Crawford*, J Yactayo-Chang*, S Vanderpool, and A Lorence. ***F. Crawford won Award to Best Undergraduate Poster.***
71. ABI 2007 Fall Symposium October 23, 2007, Little Rock, AR. “Harnessing the power of vitamin C for enhancing human and plant health” K Lisko*, RS Harris*, F Crawford*, J Yactayo* and A Lorence.
72. ABI 2007 Fall Symposium October 23, 2007, Little Rock, AR. “Environmental contaminants, autoimmune disease and phytoremediation” KM Gilbert, B Pzybyla, N Pumford, T Han, J Fuscoe, L Schnackenberg, JC Dosss, LA Macmillan-Crow, A Lorence, F Medina-Bolivar, C Cramer, and SJ Blossom.
73. RISE Scholars 2007 Summer Research Symposium, August 9, 2007, Jonesboro, AR. “Searching for the “C” in mustards” F Crawford*, J Yactayo-Chang*, S Vanderpool, and A Lorence.

74. Arkansas Bioinformatics Society (ARBIOS) Symposium: Building Careers in Bioinformatics, Arkansas State University, Jonesboro, AR, April 19-21, 2007. "Glucuronolactonase, a gene family encoding enzymes involved in vitamin C biosynthesis and degradation" G Wilson*, J Martínez-Quintana*, and A Lorence. ***G Wilson received Award for Best Undergraduate Poster.***
75. 21st National Conference on Undergraduate Research (NCUR), Dominican University of California, April 12-14, 2007, San Rafael, CA. "Vitamin C biosynthesis in mustard species". J Uwase*, G Wilson*, J Martínez-Quintana*, S Simeon*, S Hill*, S Vanderpool, and A Lorence.
76. Pittsburgh Conference (Pittcon 2007) Meeting, February 25 – March 1, 2007, Chicago, IL "HPTLC method for simultaneous cellular redox and energy state determination of plant samples" S Simeon*, R Hannigan, J Martínez-Quintana*, F Medina-Bolivar, and A Lorence.
77. Fall 2006 INBRE – Undergraduate Research Conference, University of Arkansas, November 3-4, 2006, Fayetteville, AR. "Screening of *Arabidopsis thaliana* knockout lines looking for genes encoding glucuronolactonase, the third enzyme in the *myo*-inositol pathway to ascorbate" G Wilson*, J Uwase*, S Simeon*, J Martínez-Quintana*, and A Lorence.
78. Fall 2006 INBRE – Undergraduate Research Conference, University of Arkansas, November 3-4, 2006, Fayetteville, AR. "Elevated foliar vitamin C content confers plants tolerance to stresses" KA Lisko*, J Martínez-Quintana, B Jullian*, M Vaughan*, BI Chevone, CL Nessler, and A Lorence.
79. ABI 2006 Fall Symposium, October 25, 2006, Little Rock, AR. "ORNA: a master regulator of genes in the tobacco plant" A Lorence, BJ Woffenden, J Martinez-Quintana*, L Nopo-Olazabal, CL Nessler and F Medina-Bolivar.
80. ABI 2006 Fall Symposium, October 25, 2006, Little Rock, AR. "Vitamin C biosynthesis in mustard species" J Uwase*, G Wilson*, J Martínez-Quintana, S Simeon*, S Hill, S Vanderpool, and A Lorence.
81. ABI 2006 Fall Symposium, October 25, 2006, Little Rock, AR. Seeding success… from people to products" C Cramer, E Hood, M Dolan, and A Lorence.
82. Society for Advancement of Chicanos and Native Americans in Science Meeting, October 26-28, 2006, Tampa, FL "Screening of *Arabidopsis thaliana* knockout lines looking for genes encoding glucuronolactonase, the third enzyme in the *myo*-inositol pathway to ascorbate" G Wilson*, J Uwase*, S Simeon*, J Martínez-Quintana*, and A Lorence.
83. Society for Advancement of Chicanos and Native Americans in Science Meeting, October 26-28, 2006, Tampa, FL "Elevated foliar vitamin C content confers plants tolerance to stresses" KA Lisko*, J Martínez-Quintana*, B Jullian*, M Vaughan*, BI Chevone, CL Nessler, and A Lorence.
84. International Symposium on High Performance Thin Layer Chromatography, October 9-11, 2006, Berlin, Germany. "HPTLC as a tool to rapidly assess the elicitor responsiveness of hairy roots cultured in the Liquid Lab™ reactor" F Medina-Bolivar, L Nopo-Olazabal, S Simeon*, K Shelton, J Condori, R Hannigan, and A Lorence.
85. RISE Scholars 2006 Summer Research Symposium, August 11, 2006, Jonesboro, AR. "Vitamin C biosynthesis in mustard species" J Uwase*, G Wilson*, J Martínez-Quintana*, S Simeon*, S Hill*, S Vanderpool, and A Lorence.
86. McNair Scholars 2006 Summer Research Symposium, July 26-27, 2006, Jonesboro, AR. "Screening of Arabidopsis lines looking for genes encoding glucuronolactonase, the third enzyme in the *myo*-inositol pathway to ascorbate" G Wilson*, J Uwase*, S Simeon*, J Martínez-Quintana*, and A Lorence.
87. Phytochemical Society of North America Meeting, July 8-12, 2006, Oxford, MS. "Elicitation and secretion of sesquiterpenes in hairy roots cultured in the Liquid Lab™ bioreactor". L Nopo-Olazabal, S Simeon*, R Hannigan, A Lorence, and F Medina-Bolivar. ***S Simeon won a Student Travel Award from PSNA.***

88. 16th Penn State Symposium in Plant Physiology, May 18-20, 2006, State College, PA. "*Myo*-Inositol oxygenase and D-glucuronic acid reductase, the two first enzymes in a new route to vitamin C formation in plants" A Lorence, A Rogers*, J Martínez-Quintana*, J Robinson, W Zhang, P Mendes, BI Chevone, and CL Nessler.

89. 2005 Fall Symposium, Arkansas Biosciences Institute, September 28-29, 2005, Little Rock, AR. "*Myo*-inositol oxygenase and glucuronic acid reductase, the two first enzymes in a new route to vitamin C formation in plants" A Lorence, A Roger*, J Robinson*, W Zhang, P Mendes, B Chevone, and CL Nessler.

90. 1st Gordon Conference in Plant Metabolic Engineering, July 10-15, Tilton, NH. "A novel F-box gene, *osf1*, regulates leaf ascorbate in Arabidopsis and alters ozone sensitivity" W Zhang, A Lorence, CL Nessler, and BI Chevone.

91. 37th Air Pollution Workshop, April 25-28, Banff, Alberta, Canada. "A novel F-box gene, *osf1*, regulates leaf ascorbate in Arabidopsis and alters ozone sensitivity" W Zhang, A Lorence, CL Nessler, and BI Chevone.

92. 21st Annual Research Symposium and Exposition of the Graduate Student Assembly of Virginia Tech, March 23, 2005. Blacksburg, VA. "Metabolic engineering of specialized metabolite biosynthesis, a novel approach for the discovery of human therapeutics" M Smith, B Woffenden, CL Nessler, A Lorence, and F Medina-Bolivar.

93. 15th International Conference on Arabidopsis Research. July 11-14 2004, Berlin, Germany. "Contribution of the *myo*-inositol oxygenase (*miox*) gene family of *Arabidopsis thaliana* to ascorbate biosynthesis" A Lorence, J Robinson*, BI Chevone, P Mendes, and CL Nessler.

94. 15th International Conference on Arabidopsis Research. July 11-14 2004, Berlin, Germany. "Identification and characterization of a putative glucuronic acid reductase in *Arabidopsis thaliana"* A Lorence, A Rogers*, P Mendes, W Zhang, BI Chevone, and CL Nessler.

95. 2004 International Congress on Natural Products Research. July 31-August 4 2004, Phoenix, AZ. "Convolvulaceous resin glycosides induce non-selective pore formation in cell membranes" RA Villatoro-Vera*, M. Bah, A Lorence, and R Pereda-Miranda.

96. 2003 Symposium, Undergraduate Summer Research Internship of the Multicultural Academic Opportunities Program. Summer, 2003, Blacksburg, VA. "Genetic engineering of an alternative vitamin C pathway in Arabidopsis" J Robinson*, A Lorence, BI Chevone, P Mendes, and CL Nessler.

97. First International Congress on Plant Metabolomics, April 7-11 2002, Wageningen, The Netherlands. "Production of camptothecin and 10-hydroxycamptothecin from *Camptotheca acuminata* hairy roots" A Lorence, F Medina-Bolivar, and CL Nessler.

98. 42nd Annual Meeting of the *American Society of Pharmacognosy* "Exploring Natural Products from Latin American Biodiversity", July 14-18 2001, Oaxaca, México. "Camptothecine production by *Camptotheca acuminata* cell suspensions" JS Angeles*, ML Villarreal, R Quintero, R Pereda-Miranda, and A Lorence.

99. First Congress of Principal Investigators of Research Projects in Applied Biological Sciences, CONACYT, Acapulco, México. "Tranformation of *Camptotheca acuminata* cell cultures for the production of camptothecin, a terpene with anticancer and antiretroviral activities" A Lorence, JS Angeles*, ML Villarreal, CL Nessler, and R Quintero.

100. Perspectives and Limitation of Biotechnology in Developing Countries, January, 24-28, 2000, San José, Costa Rica. "Camptothecine production by *Camptotheca acuminata* cell line cultures, a case of study of economic feasibility". JS Angeles*, R Quintero, and A Lorence.

101. X Week of Scientific Research, UAM-X, September 27 – October 1st, 1999, Mexico City, México. "Technological innovation in Mexican agriculture and agroindustry" JL Solleiro, C Del Valle, I Nuñez, H Hernández, R López, R Calderón, A Lorence, R Castañón, and G Pérez-Jerónimo.

102. 30th Annual Meeting SIP Banff' 97, Society for Invertebrate Pathology, August 24-29 1997, Banff, Alberta, Canada. "Phylogenetic and functional analysis of the *Bacillus thuringiensis* insecticidal crystal protein family" A Bravo, A Lorence, J Sánchez, H Flores, L Güereca, and ME Nuñez.

103. 12th World Congress on Animal, Plant and Microbial Toxins, International Society on Toxinology. September 21-26, 1997, Cuernavaca, México "Is aminopeptidase N the receptor of Cry1Ac δ-endotoxin in *Trichoplusia ni* midgut? A Lorence, A Darszon, and A Bravo.

104. 12th World Congress on Animal, Plant and Microbial Toxins, International Society on Toxinology. September 21-26, 1997, Cuernavaca, México. "The insecticidal crystal protein family from *Bacillus thuringiensis*" A Bravo, A Lorence, J Sánchez, H Flores, L Güereca, and ME Nuñez.

105. XXI National Congress of Biochemistry, November 3-7, 1996, Manzanillo, México. "Ionic channels formed by the Cry1Ac toxin in presence of its receptor in black lipid bilayers" A Lorence, J Sánchez, A Darszon, and A Bravo.

106. XX International Congress of Entomology. August 25-31, 1996, Florence, Italy "Functional and phylogenetic studies of the pore formation domain from the *Bacillus thuringiensis* delta-endotoxins" A Bravo, A Lorence, J Sánchez, and ME Nuñez.

107. Third International Workshop on Pore-Forming Toxins, September 26-28, 1996, Mainz, Germany "Pore formation of the *Bacillus thuringiensis* Cry1Ac toxin in presence of the *Trichoplusia ni* toxin-receptor in planar lipid bilayers" A Lorence, J Sánchez, A Darszon, and A Bravo.

108. XX National Congress of Biochemistry, SMB, October 30, November 4, 1994, Zacatecas, México "Permeability changes on *Spodoptera frugiperda* BBMV caused by *Bacillus thuringiensis* δ-endotoxins" A Lorence, A Darszon, R Quintero, and A Bravo.

109. International Cooperation for Development of Biotechnology Conference organized by the National Steering Committee for Biotechnology, the Chief Scientist Ministry of Industry and Trade, the Ministry of Science and the Arts, the Israel Center for R&D (MATIMOP), the Israel Export Institute and the Rashi Foundation, October 30 – November 3, 1994, Jerusalem, Israel "Cry toxins induce an increase in cation membrane permeability involving ion channels in BBMV containing functional receptors" C Díaz, A Lorence, A Darszon, A Liévano, R Quintero, and A Bravo.

110. Second Meeting of the Mexican Society of Cell Biology, October 5-7, 1994, Mexico City, Mexico "Effects of *Bacillus thuringiensis* δ-endotoxins on the permeability of *Spodoptera frugiperda* brush border membrane vesicles" A Lorence, A Darszon, R Quintero, and A Bravo.

111. VIth International Colloquium on Invertebrate Pathology and Microbial Control y IIth International Conference on *Bacillus thuringiensis*, Society for Invertebrate Pathology (XXVIIth Annual Meeting). August 28 – September 2, 1994, Montpellier, France "Effects of *Bacillus thuringiensis* δ-endotoxins on the permeability of *Spodoptera frugiperda* midgut brush border membrane vesicles" A Lorence, A Darszon, R Quintero, and A Bravo.

112. Academic Meeting, X Anniversary of the Graduate Program in Biotechnology, CCH/UNAM, June 2-3, 1994, Mexico City, México "Design of a detection system of new *Bacillus thuringiensis* δ-endotoxins" A Lorence, A Darszon, R Quintero, and A Bravo.

113. Second Workshop on Pore-Forming Toxins. September 29 - October 2, 1993, Mainz, Germany. "Fluorometric assay of potential changes of *Spodoptera frugiperda* midgut brush border membrane shows that δ-endotoxin from *Bacillus thuringiensis* induces cation selective pore formation" A Lorence, A Darszon, R Quintero and A Bravo.

114. First Meeting of the Mexican Society of Cell Biology, June 14-16, 1993, Mexico City, México "Design of a detection system for new *Bacillus thuringiensis* δ-endotoxins based on

changes in ion transport of brush border membrane vesicles" A Lorence, R Quintero, A Darszon and A Bravo.

115. The Ninth International Biotechnology Symposium, *American Chemical Society.* August 16 – 21, 1992, Crystal City, VA "Biotechnology for the development of Mexico" JL Solleiro, RL González, A Lorence, and G Gómez.
116. IV National Congress of Biotechnology and Bioengineering, SMBB, September 8-12, 1991, Mexico City, México "Comparative kinetic study of *Candida utilis* and *Saccharomyces cerevisiae* cultures in different carbon sources" A López-Baca, M Trejo-Loyo, A Lorence, and J Gómez.
117. II Week of Experimental Biology, *Universidad Autónoma Metropolitana*, Iztapalapa, May 6-9, 1991, Mexico City, México "Effect of the carbon source concentration in the biochemistry and physiology of *Saccahromyces cerevisiae* biomass production" A Lorence, A Medina, M More, T Roldán, and J Gómez.

Attention of the Media to my Research

Newspapers, Magazines, and Newsletter Articles

1. Four articles highlighting important accomplishment from my research team were published in *ASSETS of Arkansas*, Fall 2012. The articles are: 1) "Director's welcome" 2)"Highlights ASSET student researchers" 3)"Arkansas researchers use new techniques to boost plant productivity", 4) "ASSET impacts" Publication available online at : http://issuu.com/ assetsofarkansas/docs/fall2012newsletterfinal.
2. Four articles highlighting important accomplishments from my research team were published in *ASSETS of Arkansas*, Fall/Winter 2012. The articles are: 1) "P3 researcher edits new book on recombinant gene expression" 2) "SURF awards 2012", 3) "P3 student defends MS thesis", and 4) "P3 researcher mentors national conference poster winner". Publication available online at http://issuu.com/assetsofarkansas/docs/fallwinter2012.
3. "Dr. Lorence nominated as "faculty member" of *Faculty of 1000*, Agriculture and Biotechnology Section. *ASSETS of Arkansas* Volume 6, Spring/Summer 2011.
4. "Lorence invited to participate in prestigious Leadership Institute", *ASSETS of Arkansas*, Volume 5, Fall/Winter 2010.
5. "Dr. Argelia Lorence Honored with Prestigious Award", *ASSETS of Arkansas*, Volume 4, Spring/Summer 2010.
6. "Research involving medicinal plants starts", *El Diario de Morelos*, March 1st, 2010. This article highlights the graduate level course entitled: "Plant DNA Barcoding" I taught at the Research Center of Biotechnology (*Centro de Investigación en Biotecnología*) of the Autonomous University of the State of Morelos (*Universidad Autónoma del Estado de Morelos*) the first week of March. "El *Diario de Morelos"* is the most read newspaper in the State of Morelos. "*La Unión de Morelos*" and "*El Regional del Sur*", two additional newspapers also published a picture of the press conference where the course was announced.
7. "Dr. Lorence Invited to Speak in Mexico". *ASSETS of Arkansas*, Volume 2, Spring/Summer 2009.
8. "Fiona Goggin and Argelia Lorence Gave an Invited Presentation". *Vision*, the magazine of the Dale Bumpers College of Agricultural, Food and Life Sciences of the University of Arkansas, Volume 35, No. 6, November- December, 2008.
9. "Highlights in Research and Sponsored Programs", 2007-2008 Report, Arkansas State University Jonesboro, a picture of myself and one of my PhD students was chosen to illustrate this article in page 12 of this annual report.

10. “ABI Faculty Attend World In Vitro Congress”, “P3 Symposium” “Arkansas EPSCoR P3 Seed Grants” and “2008 Arkansas NSF EPSCoR Annual Conference”, these short articles highlight conferences I have presented, and proposals I have gotten funding for. *ASSETS of Arkansas*, Volume 1, Fall/Winter 2008.
11. “CSI: ASU” A photo highlighting Dr. Maureen Dolan and my participation at the CSI Summer camp was published in this article. *Voices*, the Magazine of ASU Alumni Association- Fall 2008.
12. “ASU researchers study nanoparticles and their effects in the environment” by Jennifer Bouldin. *The Jonesboro Sun*, October 5th, 2008.
13. “New science program designed to peak interest” by David Pierce, *The Osceola Times*, September 25, 2008. This article describes the work that Shea Harris, one of my MSc students has been doing by teaching science to 4th and 5th grade students.
14. “Lisko receives Student Travel Award”, article describing the award winning abstract that Katherine Lisko, one of my students received from the NIH-INBRE. The *Grand Prairie Herald*, August 27, 2008.
15. “A better understanding: ABI research seeks to find solutions to environmental concerns” by Susan O’Connor. *Jonesboro Occasions* magazine, April 2008. Article describing the research my group is doing in the area of phytoremediation.
16. “The power of green”. My photo was chosen to be included in recruiting materials designed by ASU to highlight research carried out at various academic departments in plant biotechnology. *AY Magazine*, Volume XIX, Number 12, April 2008. Also published in the *Jonesboro Occasions* magazine.
17. “Visitors from Arkansas Biosciences Institute” by Dr. Rosa Buxeda. The visit Dr. Pamela Weathers and I paid to the University of Puerto Rico campus Mayagüez was highlighted. *Newsletter of the Industrial Biotechnology Program*, UPR-Mayagüez, December 2007.
18. “New path for vitamin C production can improve crop values” by Siddique Imran. *The Jonesboro Sun*, November 11, 2007. S. Imran is one of the PhD students of my group.
19. “Research at A-State gets $9 million boost” by Susan O’Connor. Lead story (picture of my group in the front page) of the *Jonesboro Sun*, September 3rd, 2007.
20. “Biosciences board tours ASU campus” by Sherry F. Pruitt. Lead story (my picture in the front page) of *The Jonesboro Sun*, August 1st, 2007.
21. “2006 Proves to be year of achievements for A-State” by Aldemaro Romero, my research mentioned in this article published by the *Jonesboro Sun*, December 31, 2006.
22. “A-State teaching students how to investigate crime scenes” by Sherry F. Pruitt. Lead story (my picture in the front page) of *The Jonesboro Sun*, July 1st, 2006.
23. My research program was chosen by Dr. Elizabeth Hood, Associate Vice Chancellor for Research and Technology Transfer to represent ASU in the American Association of State Colleges and Universities, July 2006.
24. “ABI reaches out to future leaders” by Sherri F. Pruitt. My participation in the ABI/ASU Outreach Program is highlighted. *The Jonesboro Sun*, June 20, 2006.
25. “Biosciences Center researchers optimistic about work in plants” by Sherry F. Pruitt. Lead story of *The Jonesboro Sun*, March 12, 2006.
26. “Biosciences director describes research” by Grover Welch. *The Jonesboro Sun*, January 19th, 2006.
27. Interview for “*The Herald*” (ASU Newspaper), September 15th 2005, Jonesboro, AR.
28. “The Arkansas Biosciences Institute” by Tom Moore. *Arkansas Agriculture*, 2005, Vol. 3, Issue 1, p. 15-18.
29. “New Scientists Recruited to Arkansas”, note describing my hiring at ABI/ASU. Arkansas *Tobacco Settlement Commission*, Quarterly Report, July 2005.
30. Book I co-edited: “Recombinant Gene Expression. Reviews and Protocols” featured at *Virginia Tech Magazine*, 2004, Vol. 27, No. 1 (section books by alumni, faculty and staff).

ASU Press Releases, University Communications

1. "Dr. Lorence edits recombinant gene expression book", April 26, 2012
2. "Dr. Medina-Bolivar, Dr. Lorence win community award", December 8, 2011
3. "Dr. Lorence nominated as member of *Faculty of 1000*", April 25, 2011
4. 'Dr. Lorence invited to participate in leadership institute", August 19, 2010
5. "Faculty appointed, tenured, promoted, reassigned", May 10, 2010
6. "Dr. Lorence teaches, receives awards in Cuernavaca", May 7, 2010
7. "Drs. Cramer, Hood, Lorence participate in symposium" October 29, 2008
8. "Dr. Lorence serves as invited speaker at conference" October 10, 2008
9. "Dr. Lorence serves as advisor, co-author" August 11, 2008
10. "ASU's Lisko receives INBRE student travel award for biomedical research work", August 7, 2008
11. "Dr. Lorence Receives Grants", August 2008
12. "Dr. Lorence speaks, initiates collaborative agreement" July 7, 2008
13. "ABI faculty attend, present at World Congress on In Vitro Biology" July 2, 2008
14. "Convocations of Scholars Award – Dr. Lorence" April 14, 2008
15. "ASU professors secure National Science Foundation grant for recruiting minority students" November 12, 2007
16. "Gov. Beebe releases funds for EPSCoR projects" October 22, 2007
17. "Dr. Medina-Bolivar speaks at phytochemical conference" August 28, 2007
18. "ABI director gives keynote presentation in Mexico" July 16, 2007
19. "Dr. Lorence reviews and presents in Panama" June 13, 2007
20. "Medicinal plants expert to present biotechnology conferences at ASU" October 27, 2006
21. "Medical plants expert to present conferences" October 25, 2006
22. "Dr. Argelia Lorence selected as 'featured mentor" October 23, 2006
23. "Dr. Rachel Mata to speak in ABI seminar series" October 16, 2006

P3 News Releases

1."Dr. Argelia Lorence gives plenary talk and joins Advisory Board", August 24, 2012

TV Appearances

1. Participant of the televised panel discussion entitled: "Clash of the Minorities". Event organized as part of the Hispanic Heritage Week Celebration, Arkansas State University, TV Studio at the College of Communications Building. September 14th 2005, Jonesboro, AR.
2. TV and radio interview: "Biotechnology in Mexico". TV and Radio Show entitled: *"Detrás de la Noticia con Ricardo Rocha*", *Grupo IMER* Radio 660 AM and 94.5 FM and Cable TV. Guesses: Drs. Argelia Lorence and Enrique Galindo. November 10, 2001, Mexico City, México.

Radio Interviews

"Vitamin C and aging", interview aired on November 6, 2006 at KASU.

Papers Published in Newspapers

1. "ASU team seeks keys to aging process" by Argelia Lorence, *The Jonesboro Sun*, April 30, 2006.
2. "The Monarch Butterfly and Genetically Modified Corn" by Paulina Balbás and Argelia Lorence, *La Jornada - Investigación y Desarrollo*, December, 2001.

Advisory Activities

Primary Advisor

Post-doctoral Research Associates

Dr. Walter Suza	Aug 08 – May 11	Current Lecturer at Iowa State Univ.
Dr. Thomas Teoh	Nov 11 –Feb 12	Current Post-doc, ABI/ASU

Visiting scientist

Dr. Gabriel Betanzos	Sep – Oct 2011	Faculty, UAH, Hidalgo, Mexico

Lab technicians

Current

Raquel Torres	January 2012 - present

Past

Gwendolyn Wilson	February 09 – December 11
Nora Rubio (half time)*	March 09 - August 10

* co-advised in collaboration with Dr. Maureen Dolan

Jessica Yactayo-Chang	March 07 - January 09
Shannon Hill (part time)	September 05 - December 06
Javier Martínez-Quintana	January 06 - February 07

Graduate students

Current

Siddique I Aboobucker	PhD-Molecular Biosciences	Aug 07 - date
Katherine A Lisko	PhD-Molecular Biosciences	Aug 08 - date
Jessica Yactayo-Chang	PhD-Molecular Biosciences	Aug 12 - date
Satya Veena Tatambhotla	MS-Biotechnology	Aug 11 – date
Elizabeth Castillo	MS-Environmental Sciences	Starting March 2013

Completed

Scott Simeon- MS Chemistry (2006-2008) Note: He finished the MS program of study and also the experimental work. He was recruited out by BP Oil based on a six figure salary before completing writing the thesis.
Now: GC-MS specialist, Chemical and Petrochemical Inspectors, TX.

Rodney Shea Harris – MS Environmental Sciences (2007-2009)
Thesis: "Analysis of the protective effects of ascorbic acid on thrichloroethylene and pyrene phytotoxicity"
Now: Outreach coordinator, ABI/ASU

Jessica Yactayo-Chang – MS Chemistry (2008-2011)
Thesis: "Stable co-expression of vitamin C enhancing genes for improved production of a recombinant therapeutic protein, hIL-12, in *Arabidopsis thaliana*"
Now: PhD student, Molecular Biosciences ASU, Aug 2012 to date

Shashank Kulkarni – MS Chemistry (2008-2012), ASU
Thesis: "Elevating ascorbate content in tomato and studying the role of jasmonates in modulating ascorbate in *Arabidopsis"*
Now: PhD student, Medicinal Chemistry, Northeastern University, Aug 2012 to date

Guillermo Trujillo-Luján – MS Biology (2007-2012), Note: He finished the program of study, experimental work, and initial draft of the thesis. He did not complete the defense.

Thesis: "Functional expression and analysis of the expression pattern of a gluconolactonase involved in the *myo*-inositol pathway to ascorbate in *Arabidopsis thaliana*"

Baccalaureate students

Katherine A Lisko	BS-Forensic Science	Jan - Aug08
Gwendolyn A Wilson	BS-Biology	May 08 - Jan 09
Raquel Torres	BS-Biology	Jan – Dec 2011

Undergraduate students

Jonathan A Radin	BS-Chemistry	Summer 08 – date
Jazmin Martin	BS- Chemistry	Aug 10 – date
Katherine A Lisko	BS-Forensic Science	Oct 05 - Dec 07
Gwendolyn Wilson	BS-Biology	Aug 06 - May 08
Casey Robinson	BS-Chemistry	August - Sept 07
Hillary Colvard	BS-Chemistry	Jan - Feb 07
Rodney Shea Harris	BS-Biology	July - Dec 06
Ebony Love	BS-Chemistry	Nov09 - May 10
Raquel Torres	BS-Biology	Sept - Dec 10
Dorcee Lewis	BS-Chemistry	Sept 10 – April 11
Kayla Watkins	BS-Physics	Sept 11 – Jan 12
Kayla Walker	BS-Chemistry	July – Dec 12

Summer interns

Gwendolyn Wilson	McNair Scholar	ASU-Biology	Summers 06 and 07
Jeannette Uwase	RISE Scholar	Ivy Tech CC	Summer 06
Melinda Belisle	WPI-Scholar	Worchester Polytechnic Institute	May - Oct 07
Fayeann Crawford	RISE Scholar	Brooklyn College of CUNY	Summer 07
Emily Fawcett*	RISE Scholar	St Mary's College, MD	Summer 08
Corinna Willis*	RISE Scholar	Lincoln Univ. MO	Summer 08

*co-advised in collaboration with Dr. Maureen Dolan

Gabriela del Mar Rodríguez González	MARC Scholar	UPR-Mayagüez	Summer 11

Visiting scholars (main advisor)

Ashutosh Sharma	*CEIB/UAEM* (Mexico)	PhD- Biotechnology	Aug 28- Oct 30, 10
Federica Bestoso	University of Genova (Italy)	PhD candidate Bioengineering	July – Aug 07
Guillermo Trujillo	International Potato Center (Peru)	BS Biology	Oct – Dec 06

In collaboration with Drs. Gregory Phillips and Helen Miller

Audrei Nisio	State University of Ponta Grossa (Brazil)	BS-Agronomy	July – Dec 06

In collaboration with Dr. Maureen Dolan

Aydin Akbudak	UA-Fayetteville	PhD	July 21-25, 2008

High school students

Lilly Jones	Jonesboro High School	Jan 13 to date
Austin Slaven	West Side High School	Sept –Dec 10
Jonathan Radin	Jonesboro High School	Summer 06 - May 08

Committee Member (current and past)

USA

Cesar Ňopo	ASU	PhD-MBS	Aug 07 - date
Tianhong Yang	ASU	MS-Biology	Oct 11- date
Allison Asher	ASU	MS-EVS	Oct 07 - May 09
Kelly Carruthers	UAF	MS-Entomology	May 09 – May 12
Patrick Arsenault	WPI	PhD-Biol. & Biotechnol.	May 09 - May 2010
Alejandra Ratti	ASU	PhD-EVS	Feb 07 - Oct 10

Mexico

Ashutosh Sharma	*CEIB/UAEM*	PhD- Biotechnology	Dec 08 – April 12
Yeni Santos Mendoza	*CINVESTAV*	MS-Biochemical Eng	June 08 - Oct 10
Janet María León M	*CEIB/UAEM*	MS-Biotechnology	June 06 - Feb 08

As an Assistant Professor (Mexico)

1999-2003 Primary Advisor

Student	*Major*	*Degree*	*Year granted*
Ana Lilia Mercado-Sánchez	Chemical Engineering	BS	2002
Alejandra Rueda-Deagüeros	Chemistry	BS	2003

1998-2003 Committee Member

Student	*Degree*	*Period*	*Year granted*
Nubia C Moreno-Sarmiento	MS	1998-1999	March 99
Rubí Hernández-Rubio	MS	1998-1999	Sep 99
Alfredo Regalado-Páramo	MS	1998-2001	Aug 01
Víctor H Chávez-Tovar	MS	2001-2003	July 03
María Alejandra Brito-Cruz	MS	2000-2002	Dec 03
Ricardo Villatoro-Vera	PhD	1999-2002	Deceased
Lucila Valdéz-Castro	PhD	1999-2003	June 03

As a Post-doctoral Research Associate

April 02 – July 05

Supervisor of lab technicians, graduate students, undergraduate students and summer interns in Craig Nessler laboratory at Virginia Tech

Lab technicians

Martha Vaughan	March - Aug 05
Amy Vance	Nov 02 - Feb 05
Karen Stump	April - July 02

Graduate students

Jessica Radzio	MS	2002 - 2003
Michelle Raymond	MS	2002 - 2004

Visiting scholars

Berangère Jullian	BS-Bioinformatics Universite D'Auvergne (France)	April – Aug 05

Undergraduate students

Catherine O'Mara	March 04 - Aug 05
James A Gardner	Aug 04 - Aug 05
Joseph D Wood	Jan – Aug 05
Jennifer A Witten	March – Aug 05
Thomas R Evans	April - Aug 05
Amber M Rogers	Sept 02 - May 05
Martha Vaughan	Sept 03 – Feb 05
Melanie Turner	May 02 – Jan 05
Katherine Mitchell	May 02 - July 04
Jefferson Stroud	May 03 – Feb 04
Courtney Rudd	April 02 - April 03
Kristos Vaughan	Feb - Dec 04
David Harbourt	Feb - Aug 04
Jessica Caldwell	Sept - Dec 02
Rebecca Miller	Aug - Dec 02

Summer Interns (Minority students, Multicultural Academic Opportunities Program, MAOP)

Janeth Carranza	Prairie View A&M	Summer 04
Jon Robinson	Cornell University	Summer 03
Deanna Conquest	Delaware State University	Summer 02

High school students

Laura Nessler	Blacksburg High School	Summer 05

August 00 – June 01

Supervisor of lab technician, and undergraduate students in Craig Nessler laboratory at Virginia Tech

Lab technician

Jocelyn Fraga-Müller	Oct 00 - June 01

Undergraduate student workers

Jessica Radzio	Aug 00 - June 01
Scott McFarlain	Oct 00 - June 01

Teaching

ASU

"*Molecular Genetics and Genomics*" (Core Course, Molecular Biosciences, PhD level)
Main instructor:

Fall 2012	4 students	Lecture and laboratory sections
Fall 2011	5 students	Lecture and laboratory sections
Fall 2010	16 students	Lecture only
Fall 2009	8 students	Lecture only
Fall 2008	12 students	Lecture only
Fall 2007	11 students	Lecture only
Fall 2006	Developed the content of this course	

"*Plant DNA Barcoding*" (One-week theoretical/practical course, graduate level)
Main instructor:
15 graduate students enrolled in the MS and PhD Programs in Biotechnology of the Research Center of Biotechnology (*Centro de Investigación en Biotecnología, CEIB*, of the Autonomous University of the State of Morelos (*Universidad Autónoma del Estado de Morelos, UAEM*), Cuernavaca, México, March 1st - 5th, 2010.

"*Topics in Molecular Biosciences*" (Core Course, Molecular Biosciences, PhD level)
Team taught

Fall 2009	8 students	Lecture only
Spring 2007	6 students	Lecture only

"*Advanced Biochemistry"* (CHEM 4913, Undergraduate level)
Main instructor

Spring 2008	2 students	Lecture only
Fall 2007	Developed the content of this course	

"Making Connections" (PSCH 1913 sections 001 and 003, undergraduate level)
Main instructor

Fall 2006	24 students

"CSI Camps I and II" (High school level course to recruit students into STEM disciplines)
Team taugh

Summer 2007	I developed the lecture and hands-on module on molecular speciation of cultivars of Arabidopsis
Summer 2006	I developed the lecture and hands-on module on thin layer chromatography of plant pigments

"*Topical Seminar in Phytoremediation"* (ESCI 7121-002; Graduate level course)
Team taught

Fall 2006	6 students

Co-organized *1st International Workshop on Hairy Roots: Exploiting Plant Metabolism for Agriculture and Medicine* in collaboration with Dr. Fabricio Medina-Bolivar. Undergraduate and graduate students were able to get credit for enrolling in the workshop and attending additional sessions of classes and approving a test and final project. The name of the classes and corresponding codes are: "Biotechnological applications of hairy root cultures" BIOL 4441 (undergraduates) and BIOL 5441 (graduates), also "Exploiting Plant Metabolism for Agriculture and Medicine" ESCI 7121 (graduates).

I presented an invited lecture to *Agriculture and the Environment* (AGRI 4223), course led by Dr. William Baker "Genetically modified plants: issues and opportunities". ASU, November 14, 2006

I presented an invited lecture for McNair Scholar: “Studying and manipulating vitamin C levels in plants” Arkansas State University, Jonesboro, AR, April 17, 2006.

Past (Virginia Tech and *Universidad Autónoma del Estado de Morelos*)

September 28-30, 2004. Invited lectures in the advance course: Advanced Plant Physiology and Metabolism I. Fall 2004. PPWS/HORT 5524. Lecture: “Genome Organization and Expression”. Virginia Tech.

March 4, 2004. Invited lecture in the advanced course: Topics in Molecular, Cell Biology and Biotechnology Spring 2004. ALS/BCHM/BIOL/PPWS Departments. Lecture: “Metabolic Engineering of Plant Antioxidants”. Virginia Tech.

August – December 2001, January – July 1999. Co-lecturer for the advanced course in Molecular Biology for graduate students, *CEIB/UAEM*.

September 19, 2001. Lecturer of course “Applications of Genetic Engineering in Health, Agriculture, Food Production and Protection of the Environment” for high school Biology teachers. *AgroBio México.*

August 21, 2001. Co-lecturer for the workshop “Teaching Methodologies, Genetics and Environmental Impact” for high school Biology teachers. *Dirección de Educación Media Superior/UAEM.*

July – August 2001. Co-lecturer for the introductory course in Molecular Biology for freshman Biology students, *Facultad de Biología/UAEM*.

May – September 1999. Lecturer for the course “Mexican Biotechnology Today” for graduate students. *CEIB/UAEM.*

January 1999. Co-lecturer for the advanced course “Introduction to Modern Genetics and Biodiversity” for high school Biology teachers. *Coordinación del Nivel Medio Superior/UAEM*.

July- September 1998. Lecturer for the course “Biotechnology and Its Applications” for graduate students. *CEIB/UAEM.*

August 10-15, 1998. Co-lecturer for the course “Advanced Topics of Modern Biology” for Biology high school teachers. *Coordinación del Nivel Medio Superior/UAEM*.

February – July 1999, August 1998 – January 1999, February – July 1998. Lecturer for the basic course in Physicochemistry for Biology Majors, *Facultad de Biología/UAEM.*

November 3-7, 1997. Co-lecturer for the Theoretical-Practical Course “Biotechnology of *Bacillus thuringiensis*”. *Facultad de Ciencias Biológicas, Universidad Autónoma de Nuevo León (UANL)*.

October 3-14, 1994. Co-lecturer for the 5th Advanced Course of “Biotechnological Processes: Biotechnological Applications in Integrated Pest Management for Crops”, *Instituto de Biotecnología (IBT/UNAM),* Biotechnology Program for Latin America and the Caribbean/UNIDO, and *CEIB/UAEM.*

Membership in Editorial Boards of Peer-Reviewed Journals

Frontiers in Plant Metabolism and Chemodiversity, 2012 - date
F1000 Research, 2012 – date
ISRN Oxidative Medicine, 2012 - date

Manuscript Reviewer for Peer-Reviewed Journals

African Journal of Biotechnology
Applied Microbiology
Biochemical Engineering Journal
BioMed Central
Biotechnology and Bioengineering

Biotechnology Progress
Engineering in Life Sciences
Environmental and Experimental Botany
In Vitro Plant
International Journal of Experimental Pathology
Journal of Agricultural and Food Chemistry
Journal of Experimental Botany
Journal of Plant Physiology
Nanomedicine
OMICS: A Journal of Integrative Biology
Phytochemistry
Plant Cell Reports
Plant Cell Tissue and Organ Culture
Plant Journal
Plant Physiology and Biochemistry
Plant Science
PLoS ONE
Transgenic Research
Trends in Plant Sciences

Grant Proposal Reviewer

- Member of the EPSCoR Missouri Advisory Board (2012): My tasks included serving as primary reviewer of 6 proposals, participating in the panel discussion to rank all 50 concept papers submitted to this program, and recommend specific proposals to move to the next phase of the selection process.
- Reviewer for the South African Medical Research Council (MRC), South Africa (2012)
- National Science Foundation, Integrative Organismal Systems – Physiological and Structural System Cluster (2009)
- National Science Foundation, Genes and Genome Systems (MCB) - RUI (2009)
- U.S. Civilian Research and Development Foundation (URDF) – Science and Technology Center in Ukraine (2009)
- External Evaluator *Ad-Honorem*, *Secretaría Nacional de Ciencia, Tecnología e Innovación (SENACYT)*, Panama, Panama (March 2007 to date)
- National Science Foundation, Integrative Plant Biology - Functional and Regulatory Systems Cluster (2006)
- National Science Foundation, Division of Biological Infrastructure – Research Experience for Undergraduates Sites (2005)
- BARD, the United States - Israel Binational Agricultural Research & Development Fund (2004)
- *Universidad Autónoma del Estado de Morelos*, Cuernavaca, México (1997).

Service

Service to Arkansas State University

Service to the University overall

- Member of the Patent Policy Task Committee, January 2013 - present

- Member of the *Molecular Biosciences (MBS) Graduate Program Committee*, December 2008 – present.
- Member of the Search Committee for Executive Director of Arkansas Biosciences Institute, October 2011 – April 2012.
- Judge, Create @ State, A Symposium of Research and Scholarship, March 29, 2011, Jonesboro, AR
- Member of the Search Committee, Director of Pre-Awards, Office of Research and Technology Transfer (ORTT), April – May 2010.
- Member of the *Arkansas State University Biosafety Committee (IBC)*, June 2006 – March 2009.
- Member of the *Faculty Research Awards Committee*, September 2006 to September 2009.
- Secretary (elected) of the *Faculty Research Awards Committee*, September 7, 2007 to 2008. Re-elected for 2009 calendar year.
- Collaborator with Dr. Marty Allen and Lenore Shoults in organizing celebration of "Día de Muertos" (Day of the Death) at the ASU Museum, August 2007-November 2007; 350 people attended the event the night of November 2nd from 6 to 9 pm. Participation on this event on November 1st, 2008, 500 people attended the second event.

Service to the College of Sciences and Mathematics

- Member of the Science Seminar Committee, August 2012 to date.
- Member of the Ad Hoc Committee to Identify Aspirational Peers, Nov 2011 – March 2012.
- Member of Search Committee, Professor and Head of the Department of Biological Sciences, Arkansas State University, March – May 2010.
- Master of ceremony, at the "Convocation of Scholars 2006 Honors Banquet" of the College of Science and Mathematics, ASU, Jonesboro, AR, April 12, 2006.
- Coordinator of all First Year Experience (FYE) instructors of the College of Sciences and Mathematics, ASU, Fall semester 2006.

Service to the Arkansas Biosciences Institute

- Member of Search Committee, Professor and Director of Molecular Biosciences Graduate Program, Arkansas Biosciences Institute, January - August 2006.
- Member of Search Committee, Post-doctoral Research Associate for the laboratory of Dr. Robyn Hannigan, July – December 2007.
- Member of Search Committee, Post-doctoral Research Associate for the laboratory of Dr. Elizabeth Hood, January – February 2007.
- Member of Search Committee, Post-doctoral Research Associate for the laboratory of Dr. Elizabeth Hood, May – June 2008.
- Chair and member of Search Committee, Post-doctoral Research Associate for my laboratory (June-July 2008)
- Member of Search Committee, Post-doctoral Research Associate for the laboratory of Dr. Elizabeth Hood, July – August 2008.
- My laboratory was selected as one of the highlights for the "ABI Board Tour" by Dr. Carole Cramer, Executive Director of ABI, July 30, 2007.
- My laboratory was selected as one of the highlights for the "Legislative ABI Tour" by Dr. Carole Cramer, Executive Director of ABI, October 7, 2006.

- Participation on recruitment tour to *Universidad de Puerto Rico - Río Piedras* (San Juan, Puerto Rico) and *Universidad de Puerto Rico* - Mayagüez (Mayagüez, Puerto Rico) to bring students to the Molecular Biosciences PhD Program, Nov 28 to Dec 1st, 2007.
- On-site administrator of a Promega Freezer. This freezer served several laboratories doing molecular biology at ASU (November 2005 - July 2010).
- Helped design the *Safety Training Form* all ABI staff/students must fill out before they start doing experimental work within the facilities.
- Member Committee to Redesign ABI Rm. 107 for Advanced Teleconferencing Jan 2011.
- Member of Committee to recommend hiring of two custodians, October 2012 to date.

Service to the Department of Chemistry and Physics

- Member of the Search Committee for an Assistant Professor in Organic Chemistry. Department of Chemistry and Physics, August 2012 – Jan 2013.
- Member of the Search Committee for an Assistant Professor in Organic Chemistry. Department of Chemistry and Physics, October 2011 – March 2012 (failed search).
- Member of the Search Committee for two Assistant Professors in Analytical Chemistry. Department of Chemistry and Physics, November 2008 to May 2009.
- Chair, Search Committee that selected a candidate for the Assistant Professor position in Chemistry/Forensics. Department of Chemistry and Physics, August 2007 to May 2008.
- Main coordinator of the Advanced Biochemistry class, and consultant on the preparation of a proposal for a new Biochemistry Major.
- Member of the Search Committee for an Assistant Professor in Organic Chemistry. Department of Chemistry and Physics, August 2006 - January 2007.
- Member of the Search Committee of an Assistant Professor in Analytical Forensic/Environmental Chemistry, Department of Chemistry and Physics, August 2005 - January 2006.
- Main coordinator of content design and printing of brochures and posters to recruit students to both the undergraduate and the graduate programs in Chemistry, Department of Chemistry and Physics, ASU. Among other activities I searched for funds in the office of Dr. Glen Jones, gathered pictures from all colleagues and co-wrote wording for the brochure and poster in collaboration with Drs. John Pratte and Robyn Hannigan.

Outreach

- I am one of the most active faculty members at leading tours of the ABI building. In multiple cases in addition to showing the highlights of the four focus areas in which research concentrates at ABI, I have developed teaching materials (posters, flyers, installations, etc) and hands-on activities for visitors of various ages. In the period 2005-2009 I have given tours to over 1500 people.
- Attended *Field Day* organized by the Judd Hill Foundation, September 1st, 2006.
- Participated in the Career Fair, organized by Drs. Karen Yanowitz and Staria Vanderpool as part of the *Creating Student Investigators Institute Evening Program Series*, ASU, Jonesboro, AR. Summers of 2007 and 2008.
- Participating in the Science Fair of Nettleton Junior High School, organized by Annette Holder, September 21, 2007. One of my students presented a poster and demo materials I developed to illustrate the importance of vitamin C for human and plant health.

Service to the Society for In Vitro Biology

- Since March 2009 and to date I serve on the Student Affairs Awards Committee. I served as interim chair of the committee in 2011.
- I co-organized a session on "*Herbal Medicines: In Vitro and Clinical Validation*". This event took place at the 2011 Society for In Vitro Biology Meeting, in Raleigh, NC, June 4-8, 2011. My activities included inviting speakers, fundraising and serving as co-convener of this session.
- I co-organized a session on "*New Strategies for the Production of Specialized Metabolites*" and organized and served as convener of the session on "*Biodiversity for Improving Human Health*", at the World Congress on In Vitro Biology Meeting, Society for In Vitro Biology, Tucson, AR June 14-18, 2008. My activities included inviting speakers, fund rising, coordinating travel arrangements, and hosting speakers during the meeting. I served as main negotiator of support from Fisher Scientific ($3000) to partially cover the expenses of speakers from Mexico (Drs. Maria Luisa Villarreal, and Ana Ramos Valdivia) and Brazil (Dr. Claudia Simoes).

Service to the Phytochemical Society of North America (PSNA)

- Since August 2012 I am a member of the Advisory Board
- I am a member of the Organizing Committee for the 52th Annual PSNA Meeting to be held in Corvallis, Oregon, August 3-7 2013.I am also co-chairing a symposium on "Biosynthesis and Metabolism". My activities include fundraising, inviting and hosting speakers during the meeting.

Service to the American Council for Medicinally Active Plants (ACMAP)

- I organized a session on "*Traditional Medicine from Mexico and South America*". This event took place at the 3rd Annual Conference of the ACMAP, in Jonesboro, AR, May 22-25, 2012. My activities included inviting speakers, fundraising, hosting speakers and serving as convener of this session. I served as main negotiator of support from LemnaTec ($1000) to partially cover the expenses of speakers from Mexico (Drs. Rogelio Pereda-Miranda, Felipe Vázquez-Flota) and Brazil (Dr. Claudia Simoes).

Service to Universidad Autónoma del Estado de Morelos (UAEM)

- Member of *Centro de Investigación en Biotecnología (CEIB/UAEM)*-Graduated Students Admission Committee (1998-2002).

Community Service

Member of the Policy Council, Community Development Institute NEA Head Start, Jonesboro, AR, October 2011 to date. Served as Secretary of the Council (2011).
Judge, best undergraduate posters in Chemistry and Biochemistry, Fall INBRE – Undergraduate Research Conference, University of Arkansas (2008-2012)
Judge of the Science Fair, Blessed Sacrament School, Jonesboro, AR (2006, 2007 and 2009)

Synergistic activities

Co-organized "1st International Workshop on Hairy Roots: Exploiting Plant Metabolism for Agriculture and Medicine" in collaboration with Dr. Fabricio Medina-Bolivar, July 13 2006,

Jonesboro, AR. My activities included planning the content of the workshop, inviting international speakers, hosting speakers during their visit, fund raising (got $1,500 support from state wide ABI and $300 from Fisher Scientific), lead one of the hands-on exercises in the afternoon and planning all logistic aspects of the meeting (advertising, coffee breaks, meals, design of certificates for all attendees).

Main coordinator of signature of Memorandums of Agreement and Understanding between Arkansas State University and Universities in Mexico:

- Division of Natural Sciences and Engineering, *UAM-Cuajimalpa,* México (liaison Dr. Rodolfo Quintero), signed: April 2007.
- Academic Body of Natural Products, *UAEM*, Cuernavaca, México (liaison Dr. María Luisa Villarreal), signed: April 2007.
- *Universidad de Guadalajara* (liaison Dr. Carmen Gurrola-Díaz), signed March 2012.

Main coordinator and host of visits of speakers to ABI/ASU

- Dr. Rachel Mata (Oct 16-18, 2006)
- Dr. Rodolfo Quintero (Nov 1-4, 2006)
- Dr. Rogelio Pereda-Miranda (Nov 30 - Dec 9, 2006)
- Dr. Mario De Tullio (Sept 4-6, 2007)
- Dr. Robert Reis (Feb 20, 2008)
- Dr. Dimuth Siritunga (May 13-16, 2008)
- Dr. Walter Suza (June 23-24, 2008)
- Dr. Rogelio Pereda-Miranda (July 1st-12, 2008)
- Dr. Alan Tackett (Sept 17, 2008)
- Dr. Mariya Khodakovskaya (Nov 5th, 2008)
- Dr. Fiona Goggin (Dec 2nd-4rd, 2008)
- Dr. Paul Miller (Feb 18, 2009)
- Dr. Toni Kutchan (April 21-22, 2010)
- Drs. Carmen Gurrola-Díaz and Pedro García-López (Jan 8-15, 2011)
- Dr. Rogelio Pereda-Miranda (April 15-27, 2011)
- Dr. Roberto Gaxiola (April 19-21, 2011)

Membership in professional societies

American Association for the Advancement of Science (AAAS), 2001 to present.
American Society of Plant Biologist (ASPB), 2000 to present.
Phytochemical Society of North America (PSNA), 2000 to present.
Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), 2006 to present.
Society for In Vitro Biology (SIVB), 2008 to present.
Worldwide Who's Who®, 2012 to present.

Arkansas Academy of Science, 2006 to present.
Faculty Women's Club, Arkansas State University, 2005 to present.
Women in Science - ASU Chapter, 2006 to present.

February 26, 2013.

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Jonathan Merten

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Education

PhD- Analytical Chemistry,
University of Florida, Gainesville
Nicolo Omenetto and J.D. Winefordner,
thesis advisors (8/2011)

B.S.- Chemistry (ACS accredited)
minor in Spanish
University of Virginia, Charlottesville
(May 1999)

Skills

Languages: fluent in Spanish, Swahili

Computer: Labview, Origin, Mathcad, Fluofit, MS Office

Laboratory: pulsed solid state, gas, and dye **laser systems**; monochromators; fast signal detection and processing; instrument-**computer interfacing** and control; optics; aerosol generation; laser-particle measurements; **time-resolved** fluorescence spectroscopy; biological IR fluorescence imaging; signal deconvolution; high vacuum techniques; LIBS diagnostics; **Signal/Noise** considerations; basic electronics; basic machining and parts fabrication; **atomic spectroscopy**

Professional Experience

Assistant Professor at Arkansas State University. Teach undergraduate and graduate chemistry courses. Develop research program in analytical spectroscopy. Advise graduate students. (August 2012-present)

Postdoctoral Research Associate at Arkansas State University. Designed and carried out research in molecular diagnostics in LIBS plasmas. Supervised graduate student and undergraduate employees. (August 2011-August 2012)

Optics Consultant for University of Florida Department of Human and Environmental Toxicology. Designed and constructed infrared laser fluorescence imaging (microscopic and macroscopic) instrument for carbon nanotube detection in-vivo in collaboration with researchers at other universities. (summer 2011)

Teaching Assistant for Quantitative Analysis lecture at University of Florida. Hold office hours for undergraduate students and grade exams. (spring 2011)

Scientific Editor for Chromedia (commercial chromatography education website). Ensured clarity and consistency, improved sentence structure, and corrected scientific content of international expert-written texts on HPLC and GC separations. (spring 2006-fall 2007)

Teaching assistant for analytical chemistry lab. Educated and supervised 36 undergraduate students per semester. Head TA (2 semesters)-Prepared and standardized unknowns and educated fellow teaching assistants. (spring 2005- spring 2007)

Teaching assistant for freshman chemistry lecture. Taught weekly discussion sessions to supplement lecture and kept office hours for individual consultation. (spring 2004-fall 2004)

Chromatographer U. Florida Department of Veterinary Medicine. Operated and maintained HPLC for animal drug pharmacokinetics study. Maintained laboratory records, equipment, developed QA procedures. (4/2002-12/2003)

Chemistry teacher at Musoma Day Secondary School, Tanzania. Taught 320 high school students with special emphasis on laboratory work. Organized and supervised labs for students and initiated training of teachers in basic lab skills. Volunteer, US Peace Corps (8/99-12/01)

Research assistant with Pate physical chemistry group at U. Virginia. Operated high resolution molecular beam IR spectroscopy equipment alongside graduate students. (summer 1998-fall 1999)

Awards

NASLIBS student poster contest, first place-2011. "High Speed Gating in Powerchip-Induced LIBS Microplasmas".

Procter and Gamble Scholarship- 2009.

Posters/Presentations

Nathan Bullock, Jonathan Merten, Cheyenne Shephard, Matthew Jones, Christian Parigger, Susan Allen- Temporal evolution of the LIBS spectra of a representative nitro compound. FACSS SciX 2012. Kansas City, MO.

Jonathan Merten, Ben Smith, Nicolo Omenetto- Time Resolved Powerchip Laser Diagnostics: Beyond the McWhirter Criterion. FACSS SciX 2012. Kansas City, MO.

Bisesi JH, Merten, J, Parks, AN, Ferguson, PL, Sabo-Attwood- Imaging real time single walled nanotube distribution in fish using near infra-red fluorescence detection. ICEENN 2012. Banff, Alberta.

Bisesi, JH, Merten, J, Parks, AN, Ferguson, PL, Sabo-Attwood, T- Examining single walled carbon nanotube distribution in live fish during gavage and feeding studies using near infrared florescence detection. SETAC 2011. Boston, MA.

Jonathan Merten, Ben Smith, Nico Omenetto- High Speed Gating in Powerchip-Induced LIBS Microplasmas. NASLIBS 2011. Clearwater, FL.

Jonathan Merten, B. W. Smith, J.D. Winefordner, N. Omenetto- Construction of an LED-Based Pb Resonance Monochromator. Winter Plasma Conference 2010. Sanibel Island, FL.

Jonathan Merten, Nico Omenetto, Ben Smith, Jim Winefordner- Powerchip Laser Induced Breakdown Spectroscopy: plasma diagnostics and analytical considerations. NASLIBS 2009. New Orleans, LA.

Jonathan Merten, Nico Omenetto, Ben Smith, Jim Winefordner- Evaluation of Time-Resolved Fluorescence for Discrimination of Bioaerosols. Pittcon 2008. New Orleans, LA.

Xihong Wu, Jonathan Merten, Nico Omenetto, Ben Smith, Jim Winefordner- Development of a Real-time Bioaerosols Detection System. Pittcon 2005. Orlando, FL.

Publications

Carbon SWNT Localization in Zebrafish via in vivo NIR Fluorescence Imaging. Joseph Bisesi, Jonathan Merten, P. Lee Ferguson, Tara Sabo-Attwood- manuscript in preparation (spring 2013)

Time-Resolved Powerchip Laser Induced Fluorescence for Discrimination of Bacteria. – Jonathan Merten, Nicolo Omenetto, Ben Smith, Jim Winefordner-manuscript in preparation (spring 2013)

Local Thermodynamic Equilibrium Considerations in Powerchip Laser-Induced Plasmas. – Jonathan Merten, Nico Omenetto, Ben Smith – Spectrochimica Acta part B, in press (January 2013)

Development, Characterization, and Application of a Versatile Single Particle Detection Apparatus for Time-Integrated and Time-Resolved Fluorescence Measurements—Part II: Experimental Evaluation. - Xihong Wu, J. A. Merten, N. Omenetto, B. W. Smith, and J. D. Winefordner, *Laser Chemistry*, vol. 2009, Article ID 474858, 14 pages, 2009.

Monitoring the Temporal Evolution of Cesium Ground State Atoms in a Laser Induced Plasma by Diode Laser Absorption- Benoit Lauly, Dan Shelby, Jonathan Merten, Nico Omenetto, Ben Smith and Jim Wineforder- manuscript in preparation (spring 2013)

LIBS Studies of Single Suspended Particles for the Investigation of Laser-Particle and Plasma-Particle Interactions- R. A. Warren, Jonathan Merten, Dan Shelby, Ben Smith, and Nico Omenetto- manuscript in preparation (spring 2013)

Considerations on the Spectral Fluctuation Approach in Laser Induced Breakdown Spectroscopy- Heh-Young Moon, Dan Shelby, Jonathan Merten, M. Esperanza-Celis, Ben Smith, and Nico Omenetto- manuscript in preparation (spring 2013)

Carbon Swan Spectra Measurements following Breakdown of Nitro Compound Explosive Simulants- W. Witte, C. Parigger, N. A. Bullock, J. A. Merten, S. D. Allen- manuscript in preparation

Professional Service

Peer Reviews:

Applied Physics B, (co-review with Susan Allen). Summer 2012.

Funding

Faculty Research Award, (spring 2013), Arkansas State University.

Classes Taught

General Chemistry 1
Quantitative Analysis (laboratory as graduate student, guest lecturer 2013)
Secondary School Chemistry (laboratory and lecture)

Allyn C. Ontko
602 Tannehill Dr.
Jonesboro, AR 72404
870-530-9140
aontko@astate.edu

Education

1997 Ph.D. Chemistry - Iowa State University, Advisor: Robert Angelici

1993 M.S. Chemistry - University of Wyoming, Advisor: Dean Roddick

1990 B.Chem. University of Minnesota, Research Advisor: Wayland Noland

Professional Experience

Aug. 2008 – Present Associate Professor, Arkansas State University – Biochemistry

Aug. 2002 – Aug. 2008 Assistant Professor, University of Wyoming – School of Pharmacy

Aug. 2000 – Aug. 2002 Visiting Assistant Professor, University of Iowa

Aug. 1999 – Aug. 2000 Research Fellow, Pediatric Oncology, U. of Iowa Hospitals and Clinics

Aug. 1998 – Aug. 1999 Postdoc, University of Iowa, Darrel Eyman

Aug. 1997 – Aug. 1998 Postdoc, University of North Carolina; Chapel Hill, H. Holden Thorp

Awards and Honors

Honors College Professor of the Year, Arkansas State University, October 2011

American Association of Colleges of Pharmacy (AACP) Teacher of the Year, May 2007.

John P. Ellbogen Meritorius Classroom Teaching Award: University of Wyoming, Spring 2007.

University of Wyoming College of Health Sciences Oustanding Teacher Award, Spring 2007.

GAANN Fellow: Iowa State University, Awarded Fall 1996 and Fall 1995.

Arthur P. Helwig Fellow: Iowa State University, Fall 1993.

Research and Scholarship

- **Grants and Funding Awarded ($1,026,779 to date)**
  - May 2012: A. Ontko(PI), P. Crooks (Co-PI): NIH/NIGMS, #8 P20 GM103429-11 $343,176
  - Aug 2009: A. Ontko(PI); ABI Instrument Grant. $5,000
  - Aug 2006: D.Roddick, B.Sullivan, A.Ontko, R.Lewis; NSF- MIR, CHE-0619920: $311,943
  - May 2004: A. Ontko(PI); Wyoming VFW Cancer Grant; $1,400
  - Aug 2003: R. O. Kelley, A. Ontko NIH/NCRR #RR-16474. $326.110
  - May 2003: A. Ontko(PI); BRIN Summer Undergraduate Research Program; $4,000.
  - May 2003: A. Ontko(PI); Major Equipment Program, University of Wyoming, $23,950.
  - April 2003: A. Ontko(PI), D. Roddick; Faculty Grant-in-Aid; $7,500.
  - April 2002: A. Ontko(PI); Morris Academic Partnership (MAP), $2,000.
  - April 2002: A. Ontko(PI); University Research Opportunities Program (UROP); $1,700

Research and Scholarship cont…

- **Publications (Manuscripts & Patents):**

1. "Synthesis and Characterization of Cycloaurated Complexes Through Transmetalation" Kamalakannan Palanichamy and Allyn C. Ontko *submitted to J. Organomet Chem.*
2. "Antitumor Activity, Intracellular Signaling Cascades, DNA Binding Affinity, Cellular Uptake and Mechanism of Action of Gold (III) Polypyridyls in Cisplatin Sensitive and Resistant Human Ovarian Cancer cells" submitted to *Cell Chemistry & Biology*
3. "Novel Gold(III) Chelates of 7-substituted dipyrido[3,2-a:2',3'-c] phenazine and their evaluation as antitumor agents" *submitted to J. Inorg. Biochem.*
4. "Interaction of AuDPQ and AuDPPZ with pBR322 plasmid" Kamalakannan Palanichamy and Allyn C. Ontko, *Manuscript in preparation*
5. "Restriction Enzyme Digestion studies to support the groove binding of AuDPQ and AuDPPZ" Kamalakannan Palanichamy and Allyn C. Ontko, *Manuscript in preparation*
6. Palanichamy, K., Sreejayan, N., Ontko, A.; "Overcoming cisplatin resistance using gold(III) mimics: Anticancer activity of novel gold(III) polypyridyl complexes" *J. Inorg. Biochem.,* 2012, 106(1), 32-42.
7. "Synthesis, characterization, and aqueous chemistry of cytotoxic Au(III)polypyridyl complexes" Kamalakannan Palanichamy, Allyn C. Ontko; Inorganica Chimica Acta 2006, *359*, 44.
8. "A Newly synthetic chromium complex – chromium(phenylalanine)$_3$ improves insulin responsiveness and reduces whole body glucose tolerance" Yang, X; Palanachamy, K.; Ontko, A.; Rao, M.N.A.; Fang, C.;Ren, J.;Sreejayan, N. FEBS Letters 2005, *579*, 1458-1464.
9. "Synthesis and Characterization of CpMn(dfepe)(L) Complexes (dfepe = $(C_2F_5)_2PCH_2CH_2P(C_2F_5)_2$; L = CO, H_2, N_2). An Unusual Example of a Dihydride to Dihydrogen Photochemical Conversion" Merwin, R. K.; Allyn C. Ontko, A. C.; Houlis, J. F.; Roddick, D. M., *Polyhedron* 2004, *23*, 2873-2878.
10. Thorp, H. Holden; Ontko, Allyn C. Electrodes coated with metal complex-containing film and its use for electrochemical detection of nucleic acid bases. Patent # 5470.204IP.NO U.S. (*2001*)
11. Thorp, H. Holden; Ontko, Allyn C.. Electropolymerizable film, and method of making and use thereof. PCT Int. Appl. (*2000*)
12. "Electropolymerizable film, and the method of making and use thereof" A. C. Ontko and H. H. Thorp; Patent # XANI005, Xanthon Corp. (*1999*).
13. "Electrochemical Detection of Single-Stranded DNA using Polymer-Modified Electrodes" A.C. Ontko, P. M. Armistead, S. R. Kircus, H. H. Thorp. *Inorg. Chem.* 1999,*38*, 1842.
14. "Kinetic and Equilibrium Studies of the Adsorption of Bi- and Tridentate Isocyanides on Gold Powder" A. C. Ontko and R. J. Angelici. *Langmuir* 1998, *14*, 3071.
15. "Effects of Alkyl Chain Length on the Adsorption of *n*-Alkylisocyanides (RNC) on Gold Powder." A.C. Ontko and R. J. Angelici. *Langmuir* 1998, *14*, 1684.
16. "Protonation Studies of (η^5-C_5R_5)Ru(dfepe)H Complexes." Allyn Ontko, Tina Fong, Alan Lough, Robert Morris, and Dean Roddick. *Organometallics* 1998, *17*, 5467.
17. "Synthesis, Structure, and Reactivity Properties of (η^5-C_5H_5)Ru(dfepe)X Complexes: New Electrophilic Analogues to (η^5-C_5H_5)Ru$(CO)_2$ X Systems." M.S. Keady, J.D. Koola, A.C. Ontko, R.K. Merwin, D.M. Roddick *Organometallics* 1992, *11*, 3417.

- **Representative Presentations (National and Regional Abstracts): *** *too many to list*
  - Comparative modeling of pharmaceutical docking positions on P-glycoprotein using high-speed computational methods. Midsouth conference in molecular modeling, Memphis, TN, May 2011
  - Novel Gold(III) Polypyridyls Promote p53 Mediated Cytotoxicity in Cisplatin Sensitive and Resistant Human Ovarian Cancer Cell Lines, MICA Conference, Oct 2010
  - Using Au(III) and Pt(II) to enhance anticancer activity of 5-fluorouracil (5-FU), MICA Conference, Oct 2010
  - Pre- and post-assessment of general chemistry students, 240th ACS National Meeting, Boston, MA, May 2010
  - "Novel Gold(III) Chelates of 7-Substituted Dipyrido[3,2-a:2',3'-c] Phenazine and Their Evaluation as Antitumor Agents"; 61st Northwest Regional Meeting of the American Chemical Society, Reno, NV, June 2006
  - *"*Electrochemical Studies of Novel Gold(III) Polypyridyl Complexes", National Meeting of the American Chemical Society, San Diego, CA Spring 2005.
  - "Novel Gold(III) Polypyridyls Promote p53 Mediated Cytotoxicity in Cisplatin Sensitive and Resistant Human Ovarian Cancer Cell Lines" Grand Rounds University of Wyoming, Laramie, WY 82071. Spring 2005
  - "Structure Function Activity Relationships in a series of 4, 7-disubstituted-1, 10-phenanthroline Au(III) complexes" Kamalakannan, University of Wyoming Undergraduate Research Day, Laramie WY, May 2005.
- **Book Reviews and/or Edits**
  - "Biochemistry, A Conceptual Approach" by Sandler, University Press, Jan 2011
  - "Biochemistry" by Holden. Pearson Publishing. May 2010.
  - "Principles of Pharmacology" *Edited by Dr. Lynn Wecker, Dr. Sam Enna and Dr. David Bylund*; Elsevier Science & Technology, Academic Press, 360 Park Avenue South, New York, NY 10010-1710. May 2006.
  - "Chemistry, 3rd Ed."; McMurry & Fay, Prentice Hall, Upper Saddle River, NJ, June 2002.
- **Teaching (courses as primary instructor or lecturer listed)**
  - *Arkansas State University:* Biochemistry I & II, Organic Chemistry I, Environmental Chemistry, Molecular Genetics, Medicinal Chemistry
  - *University of Wyoming – School of Pharmacy:* Medicinal & Natural Products Chemistry I & II, Clinical Toxicology, Pharmacology, Pathology
  - *University of Iowa:* Organic Chemistry I & II, General Chemistry I & II
- **Service (Committees)**
  - *Arkansas State University:* Preprofessional, Library Liason, Tenure and Promotion, Numerous faculty searches, Graduate Program, Undergraduate Curriculum, MCAT prep courses, ADHE Teacher development workshops. Extensively involved in curriculum assessment and development
  - *University of Wyoming:* Admissions (MD & PharmD), Graduate program development, Accreditation, Lab Safety, Faculty Searches, PCAT and NAPLEX course review

Curriculum Vitae
Michael John Panigot

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Department of Chemistry
Arkansas State University
P. O. Box 419
State University, AR 72467-0419
Phone: (870) 972-3086

Home Address:
3404 Derby Drive
Jonesboro, AR 72404
Phone (870) 910-0340

Date of Birth: November 9, 1960

Place of Birth: Omaha, Nebraska.

Citizenship: United States

Education:

Ph.D. Chemistry: Case Western Reserve University, Cleveland, OH, 1991 (Chaim Sukenik, Advisor) GPA: 4.0/4.0.

M.S. Chemistry: Indiana University, Bloomington, IN, 1986 (Paul Grieco, Advisor). GPA: 3.13/4.0.

B.S. Chemistry: University of Nebraska at Omaha, Omaha, NE, 1983. GPA: 3.77/4.0.

Honors/Awards:

Lambda Chi Alpha Teacher of the Month, April, 2001

NIH Carcinogenesis Training Grant Postdoctoral Fellow 1992-94.

NASA Graduate Student Researchers Fellowship 1987-1990.

Case Western Reserve University Alumni Award 1986-1987.

Union Carbide Fellowship, Indiana University, 1984-1985.

Omaha World-Herald Scholarship, 1979-1983.

Employment:

Interim Department Chair: Department of Chemistry, Arkansas State University, State University, AR 7/05 - 6/06.

Associate Professor: Department of Chemistry, Arkansas State University, State University, AR 5/02 -.

Assistant Professor: Department of Chemistry, Arkansas State University, State University, AR 8/97 - 5/02.

Assistant Professor: Department of Chemistry, West Virginia State College, Institute, WV. 9/94 - 8/97.

Instructor: Division of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, The Ohio State University, Columbus, OH. Winter Quarter 1994.

Postdoctoral Research Associate / Postdoctoral Fellow: Division of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, The Ohio State University, Columbus, Ohio (Dr. Robert W. Curley, Jr., advisor). 4/91 - 8/94.

Research Associate: Case Western Reserve University, Cleveland, OH. 8/87 - 12/90; and Indiana University, Bloomington, IN, 1985.

Teaching Assistant: Case Western Reserve University, 1986-1987; Indiana University 1984-1986.

Laboratory Assistant: Eppley Cancer Research Institute, Omaha, NE 1/84 -7/84.

Undergraduate Researcher: University of Arkansas, Fayetteville, AR. June, 1983 - August, 1983.

Laboratory Technician: Metropolitan Utilities District, Omaha, NE, May, 1982 - August, 1982.

Special Appointment as Visiting Assistant Professor: Division of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, The Ohio State University, Columbus, Ohio. May-August of the years 1995, 1996, and 1997.

Affiliations:

American Chemical Society.

Polymer Chemistry Division, American Chemical Society.

Organic Chemistry Division, American Chemical Society.

Carbohydrate Chemistry Division, American Chemical Society.

Arkansas Academy of Science

Sigma Xi Scientific Research Society

Teaching Responsibilities:

Arkansas State University, State University, AR (1997 - present).

Organic Chemistry Lecture (Chem 3103 and 3113) and Lab (Chem 3101 and 3111). This course sequence is the standard two semester organic chemistry sequence for chemistry majors, some biology majors, and students planning on pursuing a career in health sciences.

Biochemistry Laboratory (Chem 4241). A laboratory course associated with biochemistry lecture dealing with biochemical techniques and the analysis, purification, and handling of biomolecules.

Advanced Organic Chemistry (Chem 6393). An graduate level course designed for graduate students in all disciplines of chemistry. The focus of this course is on modern organic synthesis and synthetic methodology.

Special Topics in Chemistry (Chem 6343). An graduate level course designed for graduate students within all disciplines of chemistry. The primary focus of this particular section of Chem 6343 is on the use of spectroscopic methods (IR, NMR and MS) in the determination of the structures of organic molecules.

Introduction to Organic and Biochemistry (Chem 1033). A survey of organic and biochemistry course designed for nursing and agriculture majors.

General Chemistry 1 and 2 Lecture (Chem 1013 and 1023). The two semester general chemistry sequence required for chemistry and biology majors as well as some other majors on campus as well as a general education physical science elective.

West Virginia State College, Institute, WV (1994 - 1997).

Advanced Organic Chemistry (Chem 425). A course designed for chemistry majors. The primary focus of this course is on modern organic synthesis and synthetic methodology.

Introductory General Chemistry I (Chem 101). An introductory course in general chemistry to provide students who have a limited background in chemistry with a basic science foundation.

Organic Chemistry Lecture (Chem 205 and 206) and Laboratory (Chem 207 and 208). A standard one-year course in organic chemistry and the corresponding laboratory designed primarily for chemistry majors and students in the pre-health professional areas.

Elementary Organic Chemistry (Chem 201). A one-semester survey of organic chemistry primarily designed for people needing only an introductory organic chemistry course.

Introduction to Polymer Science (Chemistry 210). A one-semester lecture course covering nomenclature, structure, methods of industrial preparation, properties, and uses of synthetic polymers. Designed for chemical technology majors.

The Ohio State University, Columbus, OH (Temporary position, winter quarter 1994).

Separations Methods Lecture and Laboratory (Pharmacy 789). A graduate level course designed to introduce the theory and practice of numerous separation and purification methods for organic compounds and biomolecules for first-year graduate students in the pharmaceutical sciences. Co-taught by Dr. Nigel D. Priestley.

Case Western Reserve University and Indiana University (1984 - 1987).

Teaching assistant for organic chemistry laboratory (2 sections per semester).

Publications:

1. Benzonorbornadiene End Caps for PMR resins. Panigot, M. J.; Waters, J. F.; Varde, U.; Sukenik, C. N. *Macromolecules*, **1992**, *25*, 530-534.

2. Reaction of Glycosyl Halides with Benzyl Grignard Reagents: Unexpected o-Tolyl Alkylation of Acetobromoglucose and Direct Preparation of Benzyl-β-C-Glycosides. Panigot, M. J.; Curley, R. W., Jr. *J. Carbohydr. Chem.*, **1994**, *13*, 293-302.

3. Preparation of 4-Retinamidophenyl- and 4-Retinamidobenzyl-C-Glycoside and Glucuronide Analogues of 4-Hydroxyphenylretinamide-O-Glucuronide as Potential Cancer Chemopreventive Agents. Panigot, M. J.; Humphries, K. A.; Curley, R. W., Jr. *J. Carbohydr. Chem.,* **1994**, *13*, 303-321.

4. *In vivo* use of N-(4-Hydroxyphenyl)Retinamide O-Glucuronide as a Breast Cancer Chemopreventive. Abou-Issa, H.; Curley, R. W.; Panigot, M. J.; Wilcox, K. A.; Webb, T. E. *Anticancer Research*, **1993**, *13*, 1431-36.

5. Stereospecific Assignments of Glycine in Proteins by Stereospecific Deuteration and ^{15}N Labeling. Curley, R. W., Jr.; Panigot, M. J.; Hansen, A.; Fesik, S. W. *J. Biomolecular NMR*, **1994**, *4*, 335-340.

6. Synthesis of [U-^{13}C, ^{15}N] Cysteine Hydrochloride: An Important Tool for Heteronuclear, Multi-Dimensional NMR Studies of Proteins. Panigot, M. J.; Fesik, S. W.; Curley, R. W., Jr. *J. Labelled Compounds Radiopharmaceuticals*, **1995**, *36,* 439-444.

7. Chemopreventive Activities of C-Glucuronide/Glycoside Analogues of Retinoid-O-Glucuronides Against Breast Cancer Development and Growth. Curley, R. W., Jr.; Abou-Issa, H.; Panigot, M. J.; Repa, J. J.; Clagett-Dame, M. *Anticancer Research*, **1996**, *16*, 757-764.

8. Chemotherapeutic Evaluation of N-(4-Hydroxyphenyl) Retinamide-O-Glucuronide in the Rat Mammary Tumor Model. Abou-Issa, H.; Curley, R. W., Jr.; Panigot, M. J.; Tanagho, S. N.; Sidhu, B. S.; Alshafie, G. *Anticancer Research*, **1997**, *17*, 3335-3340.

9. Combinatorial Carbohydrate Chemistry - Where Are We Now? Panigot, M. *Idrugs*, **1998**, *1*, 35 - 37.

10. Studies Toward the Preparation of C-Glycoside Dendrimers: Synthesis of a C-Glycoside Dendrimer Core Molecule and Investigations into Protecting Group Manipulation for the Preparation of Further Generations of Dendrimers. Bailey, D; Crabb, A.; Panigot, M. J. *Proceedings of the Arkansas Undergraduate Research Conference*, **1999**, p 22-26.

11. Preparation of an Electrophilic 3-Methylindole Derivative: Difficulties in Forming a Stable, Suitable Material for the Preparation of Tryptophan. Boggs, J.; McMasters, M.; Curley, R. W., Jr.; Panigot, M. J. *J. Ark. Acad. Sci.*, **2000**, *54*, 33-37.

12. Reaction of Alpine-Borane with Aldehydes: Reactivity Rate Assessment by Observation of the Disappearance of the Carbonyl n - π^* Peak by UV-Visible Spectrometry. Bland, L.; Panigot, M. J. *J. Ark. Acad. Sci.*, **2000**, *54*, 24-32.

13. Toward the Synthesis of C-Glycoside Dendrimers. Panigot, M. J.; Kim, S.; Arnold, M. W.; Bailey, A.; Bailey, D.; Faulkner, J. L.; Middleton, J. *Polymer Preprints*, **2000**, 41(2), 1292-3.

14. Virtual Coupling of Pyran Protons in the ^1H NMR Spectra OF C- and N-Glucuronides: Dependence on Substitution and Solvent. Panigot, M. J.; Robarge, M. J.; Curley, R.W., Jr. *AAPS PharmSci*, **2001** , *3(1)* , article 4.

15. Steps Toward the Preparation of Stereoselectively Beta-Deuterated Histidine. Faulkner, J. L.; Panigot, M. J. *Proceedings of the Arkansas Undergraduate Research Conference*, **2001**, 94.

16. C-Glycoside Dendrimers - Attempted Preparations By Alkyne Coupling and from Allyl C-Glycosides. Panigot, M. J.; Murthy, R.; Broadway, D.; Winn, S. M.; Tran, K.; Kim, S. *Polymer Preprints*, **2001**, *42(2)*, 431-432.

17. Stereoselective Route to ^{15}N-Labeled-β-Deuterated Amino Acids: Synthesis of (2S, 3R)-[3-^2H, ^{15}N]-Phenylalanine. Barnett, D. W., Panigot, M. J. Curley, R. W., Jr. *Tetrahedron: Asymmetry*, **2002**, *13*, 1893-1900.

Presentations:

1. Synthesis and Photochemistry of Benzonorbornadienyl Endcaps. **Panigot, M. J.**, Sukenik, C. N. Presented at the 21st Central Regional Meeting of the American Chemical Society, Cleveland, OH, 1989.

2. Cancer Chemopreventive Retinoid Metabolites: C-Glucuronide Analogs of 4-Hydroxyphenyl Retinamide-O-Glucuronide. **Panigot, M. J.**, Curley, R. W., Jr.; Humphries, K. A. Presented at the 202nd National Meeting of the American Chemical Society, New York, NY, 1991.

3. Treatment of 1-α-Bromopyranoses with Benzyl Grignard Reagents: Factors Contributing to the 1-o-Tolyl Product. **Panigot, M. J.**, Curley, R. W., Jr. Presented at the 204th National Meeting of the American Chemical Society, Washington, DC, 1992.

4. Preparation of C-Glucuronide Analogues of Retinoid O-Glucuronides and their Preliminary *In Vitro* Breast Cancer Inhibitory Activity. **Panigot, M. J.**; Sneddon, J. M.; Stephens, R. E.; Abou-Issa, H.; Curley, R. W., Jr. Presented at the 7th Annual Meeting of the American Association of Pharmaceutical Scientists, San Antonio, TX, 1992.

5. *In Vivo* use of N-(4-hydroxyphenyl) Retinamide O-Glucuronide as a Breast Cancer Chemopreventive Agent. **Abou-Issa, H.**, Curley, R. W., Jr.; Panigot, M. J.; Wilcox, K. A.; Webb, T. E. Presented at the 84th Annual Meeting of the American Association for Cancer Research, Orlando, FL, 1993.

6. C-Glycoside Analogues of Retinoid-O-Glucuronides and their Breast Cancer Inhibitory Potential. **Panigot, M. J.**, Repa, J.; Clagett-Dame, M.; Abou-Issa, H.; Curley, R. W., Jr. Presented at the 206th National Meeting of the American Chemical Society, Chicago, IL, 1993.

7. Synthesis of ^{13}C / ^{15}N Labeled Cysteine to Facilitate Heteronuclear Multidimensional NMR Studies of Proteins. **Panigot, M. J.**; Curley, R. W., Jr.; Fesik, S. W. Presented at the 208th National Meeting of the American Chemical Society, Washington, DC, 1994.

8. N- and C-Glycoside Analogues of Retinoid-O-Glucuronides and their Breast Cancer Inhibitory Potential. Panigot, M. J.; Robarge, M. J.; Repa, J. J.; Hanson, K. K.; Clagett-Dame, M.; Seth, S.; Abou-Issa, H.; **Curley, R. W., Jr.** Presented at the XIIIth International Symposium on Medicinal Chemistry, Paris, 1994.

9. Rearrangements of Benzyl Grignard Reagents in the Alkylation of Glycosyl Halides. **Warwick, T. C.**, Panigot, M. J. Presented at the 53rd Beta Kappa Chi - National Institute of Science - Brookhaven Semester Program Joint Annual Meeting, Greensboro, NC, 1996.

10. Effect of Ester Protecting Groups on the o-Tolyl Alkylation of Acylated Glycosyl Halides by Benzylmagnesium Chloride. **Warwick, T. C.**, Panigot, M. J. Presented at the 71st Annual Meeting of the West Virginia Academy of Sciences, Athens, WV, 1996.

11. Rearrangements of Benzyl Grignard Reagents in the Alkylation of Glycosyl Halides. **Warwick, T. C.**, Panigot, M. J. Presented at the 3rd Spring Research Festival at West Virginia State College, Institute, 1996.

12. Effects of Ester Protecting Groups on the o-Tolyl Alkylation of Glycosyl Halides by Benzylmagnesium Chloride. Warwick, T. C.; **Panigot, M. J.** Presented at the 28th Central Regional Meeting of the American Chemical Society, Dayton, OH, 1996.

13. Effects of Enhanced Leaving Group Ability on the o-Tolyl Rearrangement Observed in the Alkylation of Acetobromoglucose by Benzylmagnesium Chloride. **Taylor, M. L.**, Panigot, M. J. Presented at the 72nd Annual Meeting of the West Virginia Academy of Sciences, Institute, WV, 1997.

14. Effects of Decreased Leaving Group Ability on the o-Tolyl Rearrangement Observed in the Alkylation of Acetobromoglucose by Benzylmagnesium Chloride. **Wallace, C. S.**, Panigot, M. J. Presented at the 72nd Annual Meeting of the West Virginia Academy of Sciences, Institute, WV, 1997.

15. Effects of Leaving Groups on the Ortho-Tolyl Alkylation of Glycosyl Halides by Benzylmagnesium Chloride. **M. L. Taylor**, C. S. Wallace, M. J. Panigot. Presented at the 28th Southeast Regional Undergraduate Research Conference, Johnson City, TN, 1997.

16. Stereoselective Synthesis of Isotopically Labelled Amino Acids for Use in Solution Phase Protein Structure Determination. **J. Scarbrough**, R. Jackson, M. J. Panigot. Presented at the 18th Annual University of Memphis Undergraduate Research Conference, Memphis, TN, 1998.

17. Virtual Coupling of Pyran Protons in the 1H NMR Spectra of C- and N-Glucuronides: Dependence on Substitution and Solvent. **M. J. Panigot**, M. J. Robarge, R. W. Curley, Jr. Presented at the 215th National Meeting of the American Chemical Society, Dallas, TX, 1998.

18. Stereoselective Synthesis of β Deuterated Leucine from Asymmetric Reduction of Iso(butyraldehyde-d) for Use in Solution Phase Protein Structure Determination. **J. Scarbrough**, M. J. Panigot. Presented at the 82nd Annual Meeting of the Arkansas Academy of Science, Little Rock, AR, 1998.

19. Stereoselective Synthesis of β Deuterated Tryptophan from Asymmetric Reduction of Indole-3-carbox(aldehyde-d) for Use in Solution Phase Protein Structure Determination. **R. Jackson**, M. J. Panigot. Presented at the 82nd Annual Meeting of the Arkansas Academy of Science, Little Rock, AR, 1998.

20. Effects of Aromatic Ring Substitution on the Rearrangement Observed in the Alkylation of Acetobromoglucose with Benzyl Grignard Reagents. **K. Lawrence**, M. J. Panigot. Presented at the 82nd Annual Meeting of the Arkansas Academy of Science, Little Rock, AR, 1998.

21. Stereoselective Synthesis of β Deuterated Leucine from Asymmetric Reduction of Iso(butyraldehyde-d) for Use in Solution Phase Protein Structure Determination. **J. Scarbrough**, M. J. Panigot. Presented at the 5th Annual Arkansas Undergraduate Research Conference, Arkadelphia, AR, 1998.

22. Stereoselective Synthesis of β Deuterated Tryptophan from Asymmetric Reduction of Indole-3-carbox(aldehyde-d) for Use in Solution Phase Protein Structure Determination. **R. Jackson**, M. J. Panigot. Presented at the 5th Annual Arkansas Undergraduate Research Conference, Arkadelphia, AR, 1998.

23. Effects of Aromatic Ring Substitution on the Rearrangement Observed in the Alkylation of Acetobromoglucose with Benzyl Grignard Reagents. **K. Lawrence**, M. J. Panigot. Presented at the 21st Annual Area Collegiate Chemistry Meeting at the University of Tennessee - Martin, Martin, TN, 1998.

24. Synthesis of Deuterated Aldehydes as Precursors to Isotopically Labeled Amino Acids. **C. Barber**, R. Jackson, J. Scarbrough, M. J. Panigot. Presented at the 21st Annual Area Collegiate Chemistry Meeting at the University of Tennessee - Martin, Martin, TN, 1998.

25. Stereoselective Synthesis of Beta-Deuterated Amino Acids for NMR Studies of Solution Phase Protein Structure. **K. Lawrence**, **L. Benton**, C. Barber, A. Woodyard, J. Williams,. M. Wooldridge, W. E. Smith, M. J. Panigot. Presented at the 54th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, 1998.

26. Studies Toward the Synthesis of C-Glycoside Containing Dendrimers by Transition Metal Catalyzed Coupling of C-Alkynyl Glycosides with Polyhalogenated Arenes. **D. Bailey**, **A. Crabb**, M. J. Panigot. Presented at the 54th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, 1998.

27. Synthetic Efforts Toward the Synthesis of Stereoselectively Beta-Deuterated Leucine. **K. Lawrence**, M. J. Panigot. Presented at the 19th Annual University of Memphis Undergraduate Research Conference, 1999.

28. Efforts Toward the Synthesis of Stereoselectively Beta-Deuterated Tryptophan. **M. Wooldridge**, M. J. Panigot. Presented at the 19th Annual University of Memphis Undergraduate Research Conference, Memphis, TN, 1999.

29. Studies Toward the Synthesis of a C-Glycoside Dendrimer Core Molecule. **A. Crabb**, M. J. Panigot. Presented at the 19th Annual University of Memphis Undergraduate Research Conference, Memphis, TN, 1999.

30. Protecting Group Manipulations on Methyl Alpha-D-Glucoside: Model Studies for the Preparation of C-Glycoside Dendrimers. **D. Bailey**, M. J. Panigot. Presented at the 19th Annual University of Memphis Undergraduate Research Conference, Memphis, TN, 1999.

31. Investigations Into the Synthesis of a Branching Molecule Necessary in a Synthesis of C-Glycoside Dendrimers. **J. Middleton**, M. J. Panigot. Presented at the 19th Annual University of Memphis Undergraduate Research Conference, Memphis, TN, 1999.

32. Approaches to the Synthesis of Stereoselectively β-Deuterated Leucine and Tryptophan. **L. Benton**, M. J. Panigot. Presented at the 1st Annual Southwest Missouri Collegiate Chemistry Symposium, Springfield, MO, 1999.

33. Toward the Synthesis of a C-Glycoside Dendrimer. **A. Crabb**, M. J. Panigot. Presented at the 1st Annual Southwest Missouri Collegiate Chemistry Symposium, Springfield, MO, 1999.

34. Approaches to the Synthesis of Stereoselectively Beta Deuterated Leucine and Tryptophan. **M. J. Panigot**, K. Lawrence, L. Benton. Presented at the 83rd Annual Meeting of the Arkansas Academy of Science, Russellville, AR, 1999.

35. Studies Toward the Differentiation of Primary and Secondary Hydroxyl Groups in Methyl-Alpha-D-Glucopyranoside in an Effort to Prepare C-Glycoside Dendrimers, **D. Bailey**, M. J. Panigot. Presented at the 1999 Arkansas Undergraduate Research Conference and Space Grant Symposium, Arkadelphia, 1999.

36. Studies Toward the Synthesis of Beta Deuterated Amino Acids. **L. Benton**, M. J. Panigot. Presented at the 1999 Arkansas Undergraduate Research Conference and Space Grant Symposium, Arkadelphia, 1999.

37. Studies Toward the Synthesis of a C-Glycoside Dendrimer Core Molecule. **A. Crabb**, M. J. Panigot. Presented at the 1999 Arkansas Undergraduate Research Conference and Space Grant Symposium, Arkadelphia, AR, 1999.

38. Synthetic Efforts Toward the Stereoselective Synthesis of Beta-Deuterated Amino Acids For Studies of Protein Structure by Multidimensional NMR. **M. J. Panigot**, K. L. Lawrence, M. J. Wooldridge, L. S. Benton, D. W. Barnett, R. W. Curley, Jr. Presented at the 36th National Organic Chemistry Symposium, Madison, WI, 1999.

39. Synthesis of (*R*)-[2-^{2}H, ^{15}N] Glycine. **J. R. Walker**, M. J. Panigot, R. W. Curley, Jr. Presented at the 31st American Chemical Society Central Regional Meeting, Columbus, OH, 1999.

40. Unexpected Failure of Benzylmagnesium Chloride to Provide the Rearranged o-Tolyl Product Upon Alkylation of Acetobromogalactose. M. J. Panigot, **R. W. Curley, Jr.** Presented at the 218th National Meeting of the American Chemical Society, New Orleans, 1999.

41. Studies Toward the Synthesis of C-Glycoside Dendrimers: The Synthesis of a 1-C-Ethynyl Glucoside and Investigation of its Pd-Catalyzed Coupling to Polyhaloarenes. M. J. Panigot, **A. Bailey, D. Bailey**, J. Middleton. Presented at the 218th National Meeting of the American Chemical Society, New Orleans, 1999.

42. Toward a general approach to stereoselectively β-deuterated and ^{15}N-labeled amino acids: Synthesis of (2S,3S)-[3-^{2}H,^{15}N]-phenylalanine. **D. W. Barnett**, M. J. Panigot, R. W. Curley Jr. Presented at the 218th National Meeting of the American Chemical Society, New Orleans, 1999.

43. Studies Toward the Synthesis of C-Glycoside Dendrimers. M. J. Panigot, **J. L. Faulkner**, J. Middleton, D. Bailey. Presented at the 51st Southeast Regional Meeting of the American Chemical Society, Knoxville, TN, 1999.

44. Efforts Toward the Preparation of Stereoselectively Beta Deuterated Leucine and Tryptophan. M. J. Panigot, **M. Wooldridge**, K. L. Lawrence, L. S. Benton. Presented at the 51st Southeast Regional Meeting of the American Chemical Society, Knoxville, TN, 1999.

45. Steps Toward the Preparation of C-Glycoside Dendrimers. **M. J. Panigot**, Shang-U Kim, A. Bailey, D. Bailey, J. Faulkner, J. Middleton. Presented at the 7th Ibn Sina International Conference on Pure and Applied Heterocyclic Chemistry, Alexandria, Egypt, 2000.

46. Synthesis and Structural Characterization of [$CpRu(PPh_3)L_2$]OTfl complexes, L = thietane, tht, and pms. **S. Sproles**, M. Draganjac, P. M. Nave, M. J. Panigot, R. W. Curley, Jr., T. Cundari. Presented at the 20th Annual University of Memphis Undergraduate Chemistry Conference, 2000.

47. Selective Functionalization of the 6-Hydroxyl Group of Methyl alpha-D-Glucopyranoside: Application to the Preparation of C-Glycoside Based Dendrimers. **M. Arnold**, D. Bailey, M. J. Panigot. Presented at the 20th Annual University of Memphis Undergraduate Chemistry Conference, 2000.

48. Synthesis of a Linker Molecule for the Preparation of C-Glycoside Dendrimers. **J. Middleton**, J. Faulkner, M. J. Panigot. Presented at the 20th Annual University of Memphis Undergraduate Chemistry Conference, 2000.

49. Preparation of an Electrophilic 3-Methylindole Derivative: Difficulties in Forming a Stable, Suitable Material for the Preparation of Tryptophan. **J. Boggs**, M. McMasters, M. J. Panigot. Presented at the 20th Annual University of Memphis Undergraduate Chemistry Conference, 2000.

50. Synthesis of a Linker Molecule for the Preparation of C-Glycoside Dendrimers. **J. Middleton**, J. Faulkner, M. J. Panigot. Presented at the 23rd Annual Area Collegiate Chemistry Meeting, University of Tennessee - Martin, 2000.

51. Preparation of an Electrophilic 3-Methylindole Derivative: Difficulties in Forming a Stable, Suitable Material for the Preparation of Tryptophan. **J. Boggs**, M. McMasters, M. J. Panigot. Presented at the 23rd Annual Area Collegiate Chemistry Meeting, University of Tennessee - Martin, 2000.

52. Reaction of Alpine-Borane with Aldehydes: Reactivity Rate Assessment by Observation of the Disappearance of the Carbonyl n - π^* Peak by UV-Visible Spectrometry. **L. Bland**, M. J. Panigot. Presented at the 84th Annual Meeting of the Arkansas Academy of Science, Hot Springs, 2000. (3rd place undergraduate division).

53. Selective Functionalization of the 6-Hydroxyl Group of Methyl alpha-D-Glucopyranoside: Application to the Preparation of C-Glycoside Based Dendrimers. **M. Arnold**, D. Bailey, M. J. Panigot. Presented at the 84th Annual Meeting of the Arkansas Academy of Science, Hot Springs, 2000.

54. Preparation of a Galactose-Derived Lactone and Conversion to an Alkynyl C-Galactoside for use in the Preparation of C-Glycoside Containing Dendrimers. **A. Bailey**, M. J. Panigot. Presented at the 84th Annual Meeting of the Arkansas Academy of Science, Hot Springs, 2000.

55. Preparation of an Electrophilic 3-Methylindole Derivative: Difficulties in Forming a Stable, Suitable Material for the Preparation of Tryptophan. **J. Boggs**, M. McMasters, M. J. Panigot. Presented at the 84th Annual Meeting of the Arkansas Academy of Science, Hot Springs, 2000.

56. Synthesis of an Ethynyl C-Glycoside and Attempted Coupling to Polyhalogenated Arenes to form Dendrimers. **S.-U. Kim**, A. Bailey, D. Bailey, J. Middleton, M. J. Panigot. Presented at the 84th Annual Meeting of the Arkansas Academy of Science, Hot Springs, 2000. (1st Place Graduate division).

57. Selective Functionalization of the 6-Hydroxyl Group of Methyl alpha-D-Glucopyranoside: Application to the Preparation of C-Glycoside Based Dendrimers. **M. Arnold**, D. Bailey, M. J. Panigot. Presented at the 7th Annual Arkansas Undergraduate Research Conference, Arkadelphia, 2000.

58. Preparation of a Galactose-Derived Lactone and Conversion to an Alkynyl C-Galactoside for use in the Preparation of C-Glycoside Containing Dendrimers. **A. Bailey**, M. J. Panigot. Presented at the 7th Annual Arkansas Undergraduate Research Conference, Arkadelphia, 2000.

59. Toward the Synthesis of C-Glycoside Dendrimers. M. J. Panigot, **S.-U Kim**, **M. Arnold**, A. Bailey, D. Bailey, J. Faulkner, J. Middleton. Presented at the 220th national meeting of the American Chemical Society, Washington, DC, 2000.

60. The nature of nonequivalence of the α hydrogens of the complex $[CpRu(PPh_3)pms_2]OTf$: Diastereotopic hydrogens or axial-equatorial exchange? P. M. Nave, **M. Draganjac**, **M. J. Panigot**, R. W. Curley Jr., C. Cottrell. Presented at the 220th national meeting of the American Chemical Society, Washington, DC, 2000.

61. Improved synthesis of (R)-[2-^{2}H,^{15}N]-glycine hydrochloride. **J. R. Walker**, M. J. Panigot, R. W. Curley Jr. Presented at the 220th national meeting of the American Chemical Society, Washington, DC, 2000.

62. A novel synthesis of stereoselectively β-deuterated tyrosine hydrochloride. **D. W. Barnett**, M. J. Panigot, R. W. Curley Jr. Presented at the 220th national meeting of the American Chemical Society, Washington, DC, 2000.

63. Steps Toward the Preparation of C-Glycoside Dendrimers. **M. W. Arnold, S. Kim,** D. Bailey, A. Bailey, J. Middleton, D. Broadway, K. Tran, R. Murthy, S. Winn, M. J. Panigot. Presented at the 35th Midwest Regional American Chemical Society Meeting, St. Louis, MO, 2000.

64. Efforts Toward the Synthesis of Chiral Beta-Deuterated Histidine. **J. L. Faulkner**, R. W. Curley, Jr., L. S. Benton, M. McMasters, K. L. Lawrence, J. P. Boggs, M. J. Panigot. Presented at the 35th Midwest Regional American Chemical Society Meeting, St. Louis, MO, 2000.

65. Synthetic Efforts Toward the Preparation of beta-Deuterated Amino Acids. **J. L. Faulkner**, J. P. Boggs, M. McMasters, R. W. Curley Jr., **M. J. Panigot**. Presented at the 221st National meeting of the American Chemical Society, San Diego, CA, 2001.

66. Synthetic Efforts Toward the Preparation of C-Glycoside Dendrimers. **M. J. Panigot**, **S. Kim**, D. M. Bailey, A. E. Bailey, **J. L. Faulkner**, M. W. Arnold, D. Broadway, J. Middleton, K. Tran, **R. Murthy**, S. M. Winn. Presented at the 221st National meeting of the American Chemical Society, San Diego, CA, 2001.

67. Steps Toward the Synthesis of Stereoselectively Beta-Deuterated Histidine. **J. L. Faulkner**, M. J. Panigot. Presented at the 21st Annual Chemistry Undergraduate Research Conference, University of Memphis, March, 2001.

68. Preparation and Attempted Functionalization of an Alpha Allyl-C-Glucoside Via Lewis Acid Catalyzed Alpha Allylation. **R. Murthy**, M. J. Panigot. Presented at the 21st Annual Chemistry Undergraduate Research Conference, University of Memphis, March, 2001.

69. Synthesis and Manipulation of a Beta Allyl-C-Glucoside Formed Via Grignard Allylation of Acetobromoglucose. **D. Broadway**, M. J. Panigot. Presented at the 21st Annual Chemistry Undergraduate Research Conference, University of Memphis, March, 2001.

70. Selective Protection and Functional Group Interconversion of Methyl-alpha-D-Glucoside: Model Studies for the Preparation of a C-Glycoside Dendrimer. **K. Tran**, M. J. Panigot. Presented at the 21st Annual Chemistry Undergraduate Research Conference, University of Memphis, March, 2001.

71. Production of an Alkynyl C-Galactoside as a Precursor to C-Galactoside Containing Dendrimers. **S. M. Winn**, M. J. Panigot. Presented at the 21st Annual Chemistry Undergraduate Research Conference, University of Memphis, March, 2001.

72. Preparation of Beta Allyl-C-Glucosides and their Attempted Functionalization to Prepare a C-Glycoside Core Molecule. **D. Broadway**, M. J. Panigot. Presented at the 85th Annual Meeting of the Arkansas Academy of Science, Conway, AR, 2001.

73. Successes and Difficulties in the Regioselective Protection and Functionalization of the 6-position of Methyl Alpha-D-Glucopyranoside as a Model Study for the Synthesis of C-Glycoside Dendrimers. **S. M. Winn**, M. J. Panigot. Presented at the 85th Annual Meeting of the Arkansas Academy of Science, Conway, AR, 2001.

74. Efforts Toward the Preparation of Ethynyl C-Glycoside Containing Dendrimers. **S.-U. Kim**, M. J. Panigot. Presented at the 85th Annual Meeting of the Arkansas Academy of Science, Conway, AR, 2001.

75. Investigations into the Synthesis of Isotopically Labeled Histidine and Tryptophan - Difficulties and Results. **M. J. Panigot**, J. P. Boggs, J. L. Faulkner. Presented at the 85th Annual Meeting of the Arkansas Academy of Science, Conway, AR, 2001.

76. Toward the Synthesis of Beta-Deuterated Histidine. **J. L. Faulkner**, M. J. Panigot. Presented at the 8th Annual Arkansas Undergraduate Research Conference, Arkadelphia, 2001.

77. Differentiation of the Hydroxyl Groups of Methyl Alpha-D-Glucopyranoside. **K. Tran**, M. J. Panigot. Presented at the 8th Annual Arkansas Undergraduate Research Conference, Arkadelphia, 2001.

78. Synthetic Efforts Toward the Preparation of Beta Deuterated Tryptophan. **J. P. Boggs**, M. J. Panigot. Presented at the 8th Annual Arkansas Undergraduate Research Conference, Arkadelphia, 2001.

79. Studies Toward the Preparation of Beta Deuterated Amino Acids. **J. P Boggs**, M. J. Panigot. Presented at the 15th National Conference on Undergraduate Research, Lexington, KY 2001

80. C-Glycoside dendrimers - attempted preparations by alkyne coupling and from allyl-C-glycosides. **M. J. Panigot**, **R. Murthy**, **D. Broadway**, S. M. Winn, K. Tran, Shang-U Kim. Presented at the 222nd National Meeting of the American Chemical Society, Chicago, IL, 2001.

81. Synthetic efforts toward the preparation of stereoselectively β deuterated histidine and tryptophan. **M. J. Panigot**, **J. P. Boggs**, J. L. Faulkner, R. W. Curley, Jr. Presented at the 222nd National Meeting of the American Chemical Society, Chicago, IL, 2001.

82. Efforts Toward the Preparation of Chiral Beta-Deuterated Amino Acids. **M. Panigot**, J. Boggs, J. Faulkner. Presented at the 36th Midwest Regional Meeting of the American Chemical Society, Lincoln, NE 2001.

83. Studies in the Synthesis of C-Glycoside Dendrimers. **M. Panigot**, D. Broadway, R. Murthy, S. Kim, K. Tran, S. Winn. Presented at the 36th Midwest Regional Meeting of the American Chemical Society, Lincoln, NE 2001.

84. Studies in the Synthesis of C-Glycoside Dendrimers - Difficulties and Solutions. **R. Carlton**, A. Caldwell, J. Boggs, M. J. Panigot. Presented at the 22nd Annual Undergraduate Research Conference at the University of Memphis, Memphis, TN, 2002.

85. Efforts Toward the Preparation of Stereoselectively Beta Deuterated Histidine. **L. White**, J. Faulkner, M. J. Panigot. Presented at the 22nd Annual Undergraduate Research Conference at the University of Memphis, Memphis, TN, 2002.

86. Studies in the Synthesis of C-Glycoside Dendrimers. **A. Caldwell**, J. Boggs, R. Carlton, M. J. Panigot. Presented at the 25th Annual SAACS Area Collegiate Chemistry Meeting, University of Tennessee - Martin, Martin, TN 2002.

87. Investigation Into the Synthesis of C-Glycoside Dendrimers. **J. Boggs**, A. Caldwell, R. Carlton, M. J. Panigot. Presented at the 9th Annual Arkansas Undergraduate Research Conference, Henderson State University, Arkadelphia, AR 2002.

88. Efforts Toward the Preparation of Stereoselectively Beta-Deuterated Histidine.**L. White**, J. Faulkner, M. Panigot, R. W. Curley, Jr. Presented at the 86th Annual Meeting of the Arkansas Academy of Science, University of Arkansas at Little Rock, Little Rock, AR, 2002.

89. Studies in the Synthesis of C-Glycoside Dendrimers - Difficulties and Solutions. **A. Caldwell**, J. Boggs, R. Carlton, M. Panigot. Presented at the 86th Annual Meeting of the Arkansas Academy of Science, University of Arkansas at Little Rock, Little Rock, AR, 2002.

90. Efforts toward the preparation of stereoselectively β-deuterated histidine. **M. J. Panigot**, L. A. White, J. L. Faulkner, R. W. Curley Jr., D. W. Barnett. Presented at the 224th National Meeting of the American Chemical Society, Boston, MA 2002.

91. Studies in the synthesis of C-glycoside dendrimers: Difficulties and solutions. **M. J. Panigot**, **J. P. Boggs**, **A. S. Caldwell**, **R. R. Carlton**. Presented at the 224th National Meeting of the American Chemical Society, Boston, MA 2002.

92. The nature of nonequivalence of the alpha hydrogens of the complex $[CpRu(PPh_3)(pms)_2]OTf$: Diastereotopic hydrogens or axial - equatorial exchange? P. M. Nave, **M. Draganjac**, M. J. Panigot, R. W. Curley, Jr., C. Cottrell. Presented at the Mid-South Inorganic Chemists Association, Memphis, TN, 2002.

93. Efforts Toward the Synthesis of C-Glycoside Dendrimers. **Panigot, M. J.**, Boggs, J. Caldwell, A., Carlton, R., Faulkner, J., Kim, S. Presented at the 2002 Annual Meeting of Sigma Xi, Galveston, TX

94. Steps Toward the Synthesis of C-Glycoside Containing Dendrimers. **M. J. Panigot**, J. P. Boggs, S-U. Kim, A. S. Caldwell, R. R. Carlton, **A. L. Bare**. Presented at the 225th National Meeting of the American Chemical Society, New Orleans, LA 2003.

95. Efforts Toward the Synthesis of Stereoselectively β-Deuterated Histidine. **M. J. Panigot**, R. W. Curley Jr., D. W. Barnett, R. Long, E. M. Brooks, A. L. Bare, J. P. Boggs, J. L. Faulkner. Presented at the 225th National Meeting of the American Chemical Society, New Orleans, LA 2003.

96. Steps Toward the Synthesis of C-Glycoside Containing Dendrimers. **M. J. Panigot**, J. P. Boggs, S-U. Kim, **M. Whiteside**, **J. Lamb**, A. L. Bare. Presented at the 26th Annual Area Collegiate Chemistry Meeting, Murray, KY 2003.

97. Efforts Toward the Synthesis of Stereoselectively β-Deuterated Histidine. M. J. Panigot, R. W. Curley Jr., D. W. Barnett, **R. Long**, E. M. Brooks, A. L. Bare, J. P. Boggs, J. L. Faulkner. Presented at the 26th Annual Area Collegiate Chemistry Meeting, Murray, KY 2003.

98. Steps Toward the Synthesis of C-Glycoside Containing Dendrimers. M. J. Panigot, J. P. Boggs, S-U. Kim, A. S. Caldwell, R. R. Carlton, **A. L. Bare**. Presented at the 10th Annual Arkansas Undergraduate Research Conference, Arkadelphia, AR 2003.

99. Steps Toward the Synthesis of C-Glycoside Containing Dendrimers. **M. J. Panigot**, S.-U Kim, A. M. Bare, M. D. Whiteside, J. Lamb, J. Boggs, J. Faulkner, A. Caldwell, R. Carlton. Presented at the 38th National Organic Symposium, Bloomington, IN 2003.

100. Efforts Toward the Synthesis of Stereoselectively Beta-Deuterated Histidine. **M. J. Panigot**, R. W. Curley, Jr., D. W. Barnett, R. Long, J. Faulkner, L. White, A. Kent. Presented at the 38th National Organic Symposium, Bloomington, IN 2003.

101. Steps Toward the Preparation of Thioglycoside Dendrimers. **M. J. Panigot, A. R. Buckman, J. Lamb, M. Whiteside**, A. Hausman, B.. Lies, R. Morgan, M. Draganjac. Presented at the 227th National Meeting of the American Chemical Society, Anaheim, CA 2004.

102. Steps Toward the Preparation of Thioglycoside Dendrimers. **M. J. Panigot**, **J. Botte**, **J. Lamb**, **M. McDonald**, **G. Nichols**, **V. Orrick**, **A. Pearrow**, **Z. Roe**, **M. Whiteside**, **A. Hausman**, **A. Buckman**, **B. Lies**, **R. Morgan**, **M. Draganjac**. Presented at the 88th Meeting, Arkansas Academy of Science, Jonesboro, AR, 2004.

103. Steps Toward the Synthesis of Thioglycoside Dendrimers. **J. Lamb**, M. J. Panigot, Presented at NCUR 2004, Indianapolis, IN 2004.

104. Steps Toward the Preparation of Glycoside and Thioglycoside Dendrimers. M. J. Panigot, M. Draganjac, Presented at the 22nd International Carbohydrate Symposium, Glasgow, UK 2004.

105. Synthesis and Metal Binding Ability of Thioglycoside Dendrimers. **M. J. Panigot**, A. R. Buckman, J. Lamb, M. Whiteside, M. McDonald, Z. Roe, A. Pearrow, G. Nichols, M. Draganjac, A. Hausman, **B. Lies**, R. Sebourn, S. Shannon. Presented at the 228th American Chemical Society National Meeting, Philadelphia, PA, 2004.

106. Toward the Synthesis and Metal Binding Ability of Thioglycoside Dendrimers. M. J. Panigot, M. Draganjac, N. Andersen, A. Bowman, J. Brands, J. Buck, A. Buckman, S. Kent, B. Lies, B. Perry, M. Rand, R. Sebourn, S. Shannon, M. Whiteside. Presented at the Arkansas BRIN Symposium, Little Rock, AR 2004.

107. Synthesis and Metal Binding Ability of Thioglycoside Dendrimers. **M. J. Panigot**, **M. Draganjac**, N. Andersen, **A. Bowman**, J. Brands, J. Buck, A. Buckman, S. Kent, **B. Lies**, B. Perry, M. Rand, R. Sebourn, **S. Shannon**, M. Whiteside. Presented at the 39th ACS Midwest Regional Meeting, Manhattan, KS, 2004.

108. Glycoside Dendrimers as Detoxification Agents for Metals in Tobacco Smoke. **M. Draganjac**, M. J. Panigot, N. Andersen, A. Bowman, J. Brands, J. Buck, A. Buckman, B. Hyman, S. Kent, B. Lies, B. Perry, M. Rand, R. Sebourn, S. Shannon. Presented at the Arkansas Biosciences Institute Fall Research Symposium, Little Rock, AR, 2004.

109. Synthesis and Metal Binding Ability of Thioglycoside Dendrimers. **M. J. Panigot**, A. Bowman, J. Brands, J. Buck, N. Folts, S. Kent, M. Rand, R. Sebourn, S. Shannon, M. Draganjac, N. Andersen, P. Blankenship, B. Hyman, B. Lies, B. Perry. Presented at the 229th American Chemical Society National Meeting, San Diego, CA, 2005.

110. Synthesis and Metal Binding Ability of Thioglycoside Dendrimers. **J. Brands,** M. J. Panigot. . Presented at the 12th Arkansas Undergraduate Research Conference, Arkadelphia, AR, 2005.

111. Synthesis and Metal Binding Ability of Thioglycoside Dendrimers. **M. J. Panigot**, A. Bowman, J. Brands, M. Cook, L. Heard, A. Johnson, S. Kent, M. Rand, R. Sebourn, S. Shannon, B. Sheridan, H. Singletary, B. Swink, M. Draganjac, P. Blankenship, B. Lies. Presented at the 39th National Organic Symposium, Salt Lake City, UT, 2005.

112. Potential chelating agents for heavy metals detoxification from ETS. **B. Lies**, M. Draganjac, M. J. Panigot, J. Brands, A. Bowman, S. Kent, L. Heard, M. Rand, R. Sebourn, S. Shannon, B. Sheridan. Presented at the 230th American Chemical Society National Meeting, Washington, DC 2005.

113. A synthesis of resveratrol using palladium-catalyzed carbon-carbon bond formation. **M. J. Panigot**, C. Mathis, S. Hargrave, A. Tucker. Presented at the 235th American Chemical Society National Meeting, New Orleans, LA 2008.

114. A synthesis of resveratrol using palladium-catalyzed carbon-carbon bond formation. **M. J. Panigot**, C. Mathis, S. Hargrave, A. Tucker. Presented at the 60th Southeast Regional Meeting of the American Chemical Society, Nashville, TN 2008.

115. A synthesis of resveratrol using palladium-catalyzed carbon-carbon bond formation. **M. J. Panigot**, J. D. Green, C. Mathis, S. Hargrave. Presented at the 237th American Chemical Society National Meeting, Salt Lake City, UT 2009.

116. Synthesis of resveratrol using Pd-catalyzed bond formation. **M. J. Panigot, X, Zhu,** J. D. Green, C. Mathis, S. Hargrave, H. McGuire, B. Strain, A. Ward, S. Anderson. Presented at the 238th American Chemical Society National Meeting, Washington, DC, 2009.

117. Pre- and post-assessment of general chemistry students. **W. Burns, T. Kennon**, M. Draganjac, M. Panigot, A. Ontko, H. Koizumi, R. Warby, S. Cron, B. Rougeau. Presented at the 240th American Chemical Society National Meeting, Boston, MA 2010.

118. Toward the synthesis of resveratrol using Pd-catalyzed bond formation. **M. J. Panigot,** D. Padal,, X. Zhu, J. D. Green, C. Mathis, S. Hargrave. Presented at the Mid-South Inorganic Chemist's Association meeting, Russellville, AR 2011.

Patents:

1. Arylamide Analogues of N-(4-Hydroxyphenyl) Retinamide-O-Glucuronide. Panigot, M. J.; Curley, R. W., Jr. US Patent # 5,574,177.

2. C-Glycoside Analogs of N-(4-Hydroxyphenyl) Retinamide-O-Glucuronide. Curley, R. W., Jr; Panigot, M. J. US Patent # 5,663,377.

Funded Grants:

1. ACS Division of Organic Chemistry Faculty Travel Grant to attend the 34th National Organic Symposium in Williamsburg, VA., June, 1995. Amount Received: $525.00.

2. WV EPSCoR grant to prepare a grant to submit to the NSF, Summer, 1996. Amount Received: $3,000.

3. "Synthesis and Use of Chiral β-Deuterated Amino Acids for NMR Studies of Protein Structure". Funded by the NSF for the period from 9/1997 to 8/1999. Joint proposal with Dr. Robert W. Curley, Jr of The Ohio State University. Amount Requested for Dr. Panigot: $34,555.00 for 2 years.

4. "Synthesis of C-Glycoside Containing Dendrimers and Their Applications", Arkansas State University Faculty Research Proposal, 7/1/1998 to 6/30/1999. Amount Received: $5,169.45.

5. "Studies Toward the Synthesis of C-Glycoside Containing Dendrimers" SILO Advisory Council Undergraduate Research Fellowship, 12/1/1998 to 10/31/1999. Amount Received: $2,432.00 plus $1,125.00 in matching funds from Arkansas State University.

6. ACS Division of Organic Chemistry Faculty Travel Grant to attend the 36th National Organic Symposium in Madison, WI., June, 1999 Amount Requested: $650.00. Amount Received: $500.00.

7. "Efforts Toward the Preparation of C-Glycoside Dendrimers" SILO Advisory Council Undergraduate Research Fellowship, 12/1/1999 to 10/31/2000. Amount Requested: $2,650.00 plus $1,250.00 in matching funds from Arkansas State University.

8. Eleanor Lane International Travel Award from Arkansas State University to attend the 7th Ibn Sina International Conference on Pure and Applied Heterocyclic Chemistry, Alexandria, Egypt, March 2000. Amount Requested and Received: $1,000.00.

9. "Studies Toward the Preparation of Isotopically Labeled Amino Acids" SILO Advisory Council Undergraduate Research Fellowship, 1/1/2001 to 10/31/2001. Amount Requested: $2,650.00 plus $1,250.00 in matching funds from Arkansas State University.

10. "Toward the Synthesis of C-Glycoside Dendrimers: Alkynyl C-Glycoside Formation and Functional Group Exchange". SILO Advisory Council Undergraduate Research Fellowship, 1/1/2002 to 10/31/2002. Amount Requested: $2,650.00 plus $1,250.00 in matching funds from Arkansas State University.

11. "Toward the Synthesis of C-Glycoside Dendrimers: Alkynyl C-Glycoside Formation and Protecting Group Exchange". SILO Advisory Council Undergraduate Research Fellowship, 1/1/2003 to 10/31/2003. Amount Requested: $2,337.50 plus $937.50 in matching funds from Arkansas State University.

12. ACS Division of Organic Chemistry Faculty Travel Grant to attend the 38th National Organic Symposium in Bloomington, IN., June, 2003 Amount Requested: $500.00. Amount Received: $500.00.

13. "Glycoside Dendrimers as Detoxification Agents for Metals in Tobacco Smoke", Arkansas Biosciences Institute, 1/1/2004 to 12/31/2004. Amount requested $106,000. Amount received $75,000

14. Eleanor Lane International Travel Award from Arkansas State University to attend the 22nd International Carbohydrate Symposium, Glasgow, Scotland, UK, July 2004. Amount Requested and Received: $1,000.

15. "Synthesis and Metal Binding Ability of Thioglycoside Dendrimers" SURF, 1/1/2005 to 10/31/2005. Amount Requested: $2,493.75 plus $1,093.75 in matching funds from Arkansas State University

16. ACS Division of Organic Chemistry Faculty Travel Grant to attend the 39th National Organic Symposium in Salt Lake City, UT, June, 2005. Amount Requested: $650.00. Amount Received: $500.00.

17. "A Synthesis of Resveratrol Using Pd-Catalyzed C-C Bond Formation". SURF Fellowship, 1/1/2008 to 10/31/2008. Amount Requested $2,650 plus $1,250 in match from Arkansas State University.

Unfunded Grants:

1. "Cyclotrimerization of Alkynyl-C-Glycosides for the Preparation of Dendrimers Containing Multiple Chiral Centers." Submitted to the Petroleum Research Fund, American Chemical Society, 1996. Amount Requested: $20,000 for 2 years.

2. "Synthesis and Use of Chiral β-Deuterated Amino Acids for NMR Studies of Protein Structure." Submitted to NSF, 1996. Joint Proposal with Dr. Robert W. Curley, Jr. of The Ohio State University. Amount Requested for Dr. Panigot: $34,287 for 2 years.

3. "Factors Influencing the Benzyl to o-Tolyl Rearrangement During the Alkylation of Glycosyl Halides by Benzyl Grignard Reagents." Submitted to Research Corp., 1995. Amount Requested: $26,000 for 2 years.

4. "Chiral β-Deuterated Amino Acids for Protein NMR." Submitted to NIH, 1996. Joint with Dr. Robert W. Curley, Jr of The Ohio State University. Amount Requested: $36,158 for 2 years.

5. "Studies Toward the Preparation of C-Glycoside Dendrimers." Preproposal Submitted to Arkansas EPSCoR for submission to the NSF, 1998. Amount Requested: $60,290.87 for 2 years.

6. "Studies Toward the Preparation of C-Glycoside Dendrimers by the Pd-Catalyzed Coupling of Polyhalogenated Arenes with C-Alkynyl Glycosides". Submitted to the Petroleum Research Fund, American Chemical Society, October, 1998. Amount Requested: $30,000 for 2 years.

7. "Synthetic Efforts Toward the Preparation of C-Glycoside Dendrimers". Submitted to the Petroleum Research Fund, American Chemical Society, June, 1999. Amount Requested: $30,000 for 2 years.

8. "Glycoside Dendrimers as Detoxification Agents for Metals in Tobacco Smoke", SILO Advisory Council Undergraduate Research Fellowship, 1/1/2004 to 10/31/2004. Amount Received: $2,650.00 plus $1,250.00 in matching funds from Arkansas State University.

Service Activities:

Served as a judge at the Northeast Arkansas Regional Science Fair, Jonesboro, AR, 1999 - 2007

Participated in the ASU Phonathon, 1999, 2000, and 2001

Served as judge and session chair at the Annual Meeting of the Arkansas Academy of Science, 1999, 2000.

Pre-pharmacy advisor at Arkansas State University, 1998 - 2010.

Nominated for the "You Made a Difference" Faculty Advisor Award, Fall 2007

ACS Student Affiliates Faculty Advisor 2000 -2001.

Pre-Pharmacy Club Faculty Advisor 2005 - present

ASU Sigma Xi chapter secretary - treasurer 2000-01, vice-president 2001-02, president 2002-03.

Member of the following departmental committees:

Chemistry Department Graduate Committee 1998 -.

Department Promotion, Retention, and Tenure Document Review Committee 2000.

Department Promotion, Retention, and Tenure Committee 2008 -.

Chemistry Department Graduate Internship Committee 2000.

Instrumentation Committee, 2000 - .

Graduate Curriculum Committee 2008 -

Organic Chemistry Coordinator 2011 -

Member of the following college and university committees:

College of Arts & Sciences Syllabus Review Committee, 2000.

Served on Who's Who selection committee fall 2000.

Served on the SILO Undergraduate Research Fellowship grant review committee in Little Rock, AR 2000 - 2004 and again 2007 - 2009.

Served on the auditing committee for the Arkansas Academy of Science, 2001.

Master's Degree Students Supervised:

Charles Blaine Buckman (Internship - contact person). Treatise title: "Elimination of Diallyl Phthalate in a Polyester Coating". Defense date Mar., 2001.

Shang-U Kim. Thesis title: "The Synthesis of C-Glycosides and Coupling to Polyhalogenated Arenes to Form Dendrimers". Defense date July, 2001.

Pamela Mullins (Internship - contact person). Treatise title: "Improving Weathering Performance and Accuracy of UV Weathering Results for Fiberglass Reinforced Plastic Products". Defense date Mar., 2004.

Melissa W. Martin. Thesis title: The Effect of Active Techniques Combined with Didactic Lecture on Student Achievement. Defense Date July 2009.

Professional Experience

Professor of Chemistry, August 2010 to present
Arkansas State University, Jonesboro, Arkansas

Associate Professor of Chemistry, August 1998 to May 2010
Arkansas State University, Jonesboro, Arkansas

Assistant Professor of Chemistry, August 1994 to May 1998
Arkansas State University, Jonesboro, Arkansas

Office of Naval Research Postdoctoral Fellow, July 1992 to July 1994
Michelson Laboratory, Naval Air Warfare Center, China Lake, California

Ph.D. Chemical Physics, August 1992
University of Minnesota, Minneapolis, Minnesota

B.A. Chemistry (A.C.S. Major), Minor: Physics and Math, Cum Laude, May 1987
Augsburg College, Minneapolis, Minnesota

Awards and Honors

Elected SPIE Senior Member, 2012

Publications

1. **Far-Infrared Difference Frequency Spectroscopy of the Weak Bond in Ar-HBr**, D.W. Firth, M.A. Dvorak, S.W. Reeve, R.S. Ford, and K.R. Leopold, *Chem. Phys. Letts.*, **168**, 161-167 (1990).
2. **Tunable Far-Infrared Spectroscopy of Malonaldehyde**, D.W. Firth, K. Beyer, M.A. Dvorak, S.W. Reeve, A. Grushow, and K.R. Leopold, *J. Chem. Phys.*, **94**, 1812-1819 (1991).
3. **Coriolis Coupling in Ar-HCl**, S.W. Reeve, M.A. Dvorak, D.W. Firth, and K.R. Leopold, *Chem. Phys. Letts.*, **181**, 259-266 (1991).
4. **Observation of Three Intermolecular Vibrational States of Ar-HF**, M.A. Dvorak, S.W. Reeve, W.A. Burns, A. Grushow, and K.R. Leopold, *Chem. Phys. Letts.*, **185**, 399-402 (1991).
5. **Far Infrared Spectroscopy of the $(0,1^1,0)$ State of Ar-D^{35}Cl**, S.W. Reeve, M.A. Dvorak, A. Grushow, W.A. Burns, and K.R. Leopold, *J. Mol. Spec.*, **152**, 252-255 (1992).
6. **How to Photograph a Chemical Reaction**, K.R. Leopold, S.W. Reeve, M.A. Dvorak, W.A. Burns, R.S. Ford, F.J. Lovas, and R.D. Suenram in Optical Methods for Time- and State-Resolved Chemistry, Edited by C. Ng, *Proceedings SPIE*, **1638**, 170-178 (1992).
7. **Microwave Spectra and Structure of HCN-BF_3: An Almost Weakly Bound Complex**, S.W. Reeve and W.A. Burns, F.J. Lovas and R.D. Suenram, and K.R. Leopold, *J. Phys. Chem.*, **97**, 10630-10637 (1993).
8. **Chemistry and Diagnostics of a DC Arcjet Diamond CVD Reactor**, S.W. Reeve and W.A. Weimer, in 3rd International Symposium on Diamond Materials, Edited by K.E. Spear, J.P. Dismukes, K.V. Ravi, B. Lux, and N. Setaka, *Proceedings of the Electrochemical Society*, *Inc*., **93-17**, 262-268 (1993).
9. **Diamond Growth Using Remote Methane Injection in a Direct Current Arcjet Chemical Vapor Deposition Reactor**, S.W. Reeve and W.A. Weimer, and D.S. Dandy, *Appl. Phys. Letts.*, **63**, 2487-2489 (1993).
10. **Plasma Diagnostic Measurements of a DC Arcjet Diamond CVD Reactor**, S.W. Reeve and W.A. Weimer, *Thin Solid Films*, **236**, 91-95 (1993).
11. **Gas Phase Chemistry in a Direct Current Arcjet Diamond CVD Reactor**, S.W. Reeve, W.A. Weimer, and F.M. Cerio, *J. Appl. Phys.*, **74**, 7521-7530 (1993).
12. **Plasma Diagnostics of a DC Arcjet Diamond CVD Reactor**, S.W. Reeve and W.A. Weimer, in Diamond and Related Materials , Edited by H. Jehn, A. Matthews, and G. McGuire, *Proceedings of the 20th International Conference on Metallurgical Coatings and Thin Films*, **Volume II**, 91-95 (1993).
13. **Determination of the Three-Fold Internal Rotation Barrier in Ar-NH_3**, A. Grushow, W.A. Burns, S.W. Reeve, M.A. Dvorak, and K.R. Leopold, *J. Chem. Phys.*, **100**, 2413-2421 (1994).
14. **Determination of Plasma Parameters in a DC Arcjet Chemical Vapor Deposition Diamond Reactor. Part I: Electrostatic Probe Analysis**, S.W. Reeve and W.A. Weimer, *J. Vac. Sci. Technol. A*, **12**, 3131-3136 (1994).

15. **Optimizing the Gas Phase Chemistry in a DC Arcjet Diamond CVD Reactor**, W.A. Weimer and S.W. Reeve, *Thin Solid Films*, **253**, 103-108 (1994).
16. **Gas Phase Chemistry in a DC Arcjet Diamond CVD Reactor**, S.W. Reeve and W.A. Weimer, in Diamond and Related Materials , Edited by H. Jehn, B.D. Sartwell, and G. McGuire, *Proceedings of the 21st International Conference on Metallurgical Coatings and Thin Films*, **Volume II**, 103-108 (1995).
17. **Determination of Plasma Parameters in a DC Arcjet Chemical Vapor Deposition Diamond Reactor. Part II: Optical Emission Spectroscopy**, S.W. Reeve and W.A. Weimer, *J. Vac. Sci. Technol. A*, **13**(2), 359-367 (1995).
18. **Optimization Techniques for a DC arcjet Diamond CVD Reactor**, S.W. Reeve, W.A. Weimer, and D.S. Dandy, in 4th International Symposium on Diamond Materials, Edited by K.E. Spear, J.P. Dismukes, K.V. Ravi, J.L. Davidson, and R.H. Hauge, *Proceedings of the Electrochemical Society*, *Inc*. (1995).
19. **On the Optimization of a DC Arcjet Diamond CVD Reactor**, S.W. Reeve, W.A. Weimer, and D.S. Dandy, *J. Mat. Res.*, **11(3)**, 694-702 (1996).
20. **Spectroscopic Temperature Measurements for a DC Arcjet Diamond CVD Reactor**, S.W. Reeve and W.A. Weimer, *Proceedings of the Arkansas Academy of Science*, **49**, 149-154 (1996).
21. **An Infrared Diode Laser Spectrometer for the Study of Jet Cooled Gases**, A. Bednar, E. Barnett, C. Lindsey, T. Heath, P. Williams, M. Draganjac, and S.W. Reeve, *Journal of the Arkansas Academy of Sciences*, **52**, 17-27 (1999).
22. **Using LabVIEW to Synchronize an Infrared Diode Laser Spectrometer with a Pulsed Supersonic Jet Expansion**, P. Williams, A. Bednar, E. Barnett, and S.W. Reeve, *Journal of the Arkansas Academy of Sciences*, **52**, 117-123 (1999).
23. **Non-Commercial Software to Interpret and Analyze High Resolution Molecular Spectra**, A. Ford and S.W. Reeve, *Journal of the Arkansas Academy of Sciences*, **55**, 172-175 (2001).
24. **Rotational Analysis of FTIR Spectra from Cigarette Smoke: An Application of Chem Spec II in the Undergraduate Research Laboratory**, A.R. Ford, W.A. Burns, and S.W. Reeve*, J. Chem. Ed.*, **81**, 865-867 (2004).
25. **Infrared Diode Laser Spectroscopy of Jet Cooled Cobalt Tricarbonyl Nitrosyl**, Kyle S. Trauth, Ginger M. Berry, William A. Burns, and S.W. Reeve*, J. Chem. Phys*., **120(9)**, 4297-4305 (2004).
26. **Sensing and Characterization of Explosive Vapors near 700 cm^{-1},** A.R. Ford and S.W. Reeve, *SPIE Proceedings*, **6540**, 65400Y1-10 (2007).
27. **The Observation and Analysis of Rotation Vibration Spectra of N_2O: A Physical Chemistry Laboratory Experiment**, M.S. Bryant, S.W. Reeve and W.A. Burns, *J. Chem. Ed*., **85(1)**, 121-124 (2008).
28. **Spectral Signatures for RDX-based Explosives in the 3 Micron Region,** T. Osborn, S. Kaimal, A.R. Ford, W. Burns and S.W. Reeve, *SPIE Proceedings*, **6945**, 69451S/1-S9 (2008).
29. **Spectral Signatures for Volatile Impurities in TNT and RDX-based Explosives,** T. Osborn, S. Kaimal, S.W. Reeve, and W. Burns, *SPIE Proceedings*, **6945**, 69451B/1-B/11 (2008)
30. **Optical detection of explosives: spectral signatures for the explosive bouquet,** Tabetha Osborn, Sindhu Kaimal, Jason Causey, William Burns and Scott Reeve, *SPIE Proceedings*, **7304**, 7304191-8 (2009)
31. **Measurement of ammonia skin gas using a mid-infrared Pb-salt tunable diode laser**, Trocia N. Clasp, Sindhu Kaimal, Scott W. Reeve, William A. Burns, *SPIE Proceedings*, **7665**, 7665181-7 (2010)
32. **Optical Detection of Special Nuclear Materials: an alternative approach for standoff and remote sensing**, J. Bruce Johnson, S.W. Reeve, W.A. Burns, and Susan D. Allen, *SPIE Proceedings*,**7665,** 76651L1-7 (2010)
33 **Reversible Control of Third-Order Optical Nonlinearity of DNA Decorated Carbon Nanotube Hybrids**, Liangmin Zhang, Jacquelyn Thomas, Jianfeng Xu, Ben Rougeau, Michael Sullivan, Scott Reeve, Susan D. Allen, Fumiya Watanabe, Alexandru Biris, and Wei Zhao, *Journal of Physical Chemistry C*, **114**, 22697-22710 (2010).
34. **An Optical Nose Approach to Explosive Detection: one strategy for optically based sensing**, T. Osborn, W.A. Burns, J. Green, and S.W. Reeve, *Spectroscopy*, **26(1)**, 34-45 (2011).
35. **FTIR and diode laser spectroscopy of isobutylene: analysis of the rotational structure in the ν_{28} fundamental band**, T.N. Clasp and S.W. Reeve, *Journal of Molecular Spectroscopy*, **266**, 92-98 (2011).
36. **Rotationally resolved infrared spectra of the explosive bouquet compounds associated with C-4 explosives,** *SPIE Proceedings,* T.N. Clasp, T. Johnson, M.N. Sullivan and S.W. Reeve, **8018**, (2011)
37. **Picosecond rotationally resolved stimulated emission pumping spectroscopy of nitric oxide**, *Chemical Physics*, C. Tanjaroon*, S.W. Reeve, A. Ford, D. Murray, K. Lyon, B. Yount, D. Britton, W.A. Burns, S.D. Allen and J. Bruce Johnson, **393(1)**, 80-85 (2012).

38. **Cavity ringdown spectroscopy of $^{13}C_2H_2$ in the 12900-13400 cm^{-1} region**, C.J. Lue, M.N. Sullivan, M.E. Draganjac, and S.W. Reeve, *Journal of Molecular Spectroscopy*, **273**, 6-10 (2012).
39. **A Graphical Excel-based Program for Calibration of High Resolution Molecular Spectra**, Jason Causey, Sindhu Kaimal, Tabetha Osborn, William Burns, Alan Ford, Tiffani Johnson, and S.W. Reeve, *Appl. Spect.*, to be submitted.
40. **Application of a Multistage Algorithm to a Floppy Molecule: normal mode assignments for FTIR spectra of 2-ethyl-1-hexanol**, Trocia N. Clasp, Tiffani Johnson, Michael Sullivan, Hideya Koizumi and S.W. Reeve, in preparation.

Patents

A Multicolor Cavity Ringdown Based Detection Method and Apparatus, S.W. Reeve and S.D. Allen, US Patent # 7,768,647 B2, August 2010.

A Multicolor Cavity Ringdown Based Detection Method and Apparatus, S.W. Reeve and S.D. Allen, US Patent # 8,237,927, July 2012.

Presentations

Invited and Contributed Talks

1. **9th Annual Spring Green Conference on Photochemistry**, Spring Green, WI, *Far-Infrared Difference Frequency Spectroscopy of the Weak Bond in Ar-HBr*, D.W. Firth, M.A. Dvorak, S.W. Reeve, and K.R. Leopold, February 15, 1990.
2. **45th Annual Ohio State University Symposium on Molecular Spectroscopy**, *Far-Infrared Vibrational Spectroscopy of Ar-HBr using a CO_2 Laser Difference Frequency System*, D.W. Firth, M.A. Dvorak, S.W. Reeve, R.S. Ford, and K.R. Leopold, TA1, June 12, 1990.
3. **ILS-VI Meeting of the American Physical Society**, Minneapolis, MN, *Far Infrared Spectroscopy: An Experimental Probe of Inter- and Intra-molecular Potential Energy Surfaces*, K.R. Leopold, M.A. Dvorak, D.W. Firth, R.S. Ford, and S.W. Reeve, September 18, 1990.
4. **46th Annual Ohio State University Symposium on Molecular Spectroscopy**, *Observation of the j=2,□k□=1 Levels of Ar-NH_3 by Far Infrared Difference Frequency-Sideband Spectroscopy,* S.W. Reeve, M.A. Dvorak, A. Grushow, W.A. Burns, and K.R. Leopold, WH9, June 19, 1991.
5. **46th Annual Ohio State University Symposium on Molecular Spectroscopy**, *Coriolis Coupling in Ar-HCl and Ar-HBr*, S.W. Reeve, M.A. Dvorak, D.W. Firth, and K.R. Leopold, TE2, June 18, 1991.
6. (*Invited Talk*) **Augsburg College Chemistry Department Seminar**, *Spectroscopic Studies of van der Waals Molecules*, October 9, 1991.
7. **The 1993 International Conference on Metallurgical Coatings and Thin Films**, San Diego, CA, *Plasma Diagnostics of a DC Arcjet Diamond CVD Reactor*, S.W. Reeve and W.A. Weimer, April 20, 1993.
8. **The 1994 International Conference on Metallurgical Coatings and Thin Films**, San Diego, CA, *Optimizing the Gas Phase Chemistry in a DC Arcjet Diamond CVD Reactor*, S.W. Reeve and W.A. Weimer, April 25, 1994.
9. **1994 IEEE International Conference on Plasma Science**, Santa Fe, NM, *Diagnostics of a DC Arcjet Diamond CVD Reactor*, S.W. Reeve and W.A. Weimer, June 7, 1994
10. **79th Annual Meeting of the Arkansas Academy of Science**, Pine Bluff, AR, *Spectroscopic Temperature Measurements for a DC Arcjet Diamond CVD Reactor*, S.W. Reeve and W.A. Weimer, April 7, 1995.
11. **187th Meeting of the Electrochemical Society, Inc.**, Reno, NV, *Optimization Techniques for a DC Arcjet Diamond CVD Reactor*, S.W. Reeve, W.A. Weimer, and D.S. Dandy, May 22, 1995.
12. **3rd Annual Arkansas Undergraduate Research Conference**, Arkadelphia, AR, *Probing the Plasma Gas Temperature in a CVD Reactor*, P. Williams and S.W. Reeve, April 20, 1996.
13. **4th Annual Arkasas Space Grant Consortium Symposium**, Conway, AR, *High Resolution Spectroscopy in a Supersonic Plasma Jet*, S.W. Reeve, April 26, 1996.
14. (*Invited Talk*)**University of Memphis Chemistry Department Seminar**, Memphis, AR, *From Methane Gas to Diamond: Understanding the Chemical Vapor Deposition Process*, February 21, 1997.
15. (*Invited Talk*)**University of Central Arkansas Chemistry Department Seminar**, Conway, AR, *A High Resolution Infrared Diode Laser Spectrometer to Study Gas Phase Free Radicals*, March 14, 1997.

16. **81st Annual Meeting of the Arkansas Academy of Science**, Monicello, AR, *A High Resolution Infrared Diode Laser Spectrometer to Study Supercooled Gases*, E. Barnett, Philip Williams, Brian Stanley, Tony Bednar and S.W. Reeve, April 5, 1997.
17. **4th Annual Arkansas Undergraduate Research Conference**, Arkadelphia, AR, *A High Resolution Infrared Diode Laser Spectrometer to Study Supercooled Gases*, A. Bednar, E. Barnett, P. Williams, B. Coomer-Cline, J.T. Shipman and S.W. Reeve, April 12, 1997.
18. **4th Annual Arkansas Undergraduate Research Conference**, Arkadelphia, AR, *Analysis of Photothermal Deflection Spectra to Extract the Thermal Properties of Composites*, J. King, S.W. Reeve, and W. Weimer, April 12, 1997.
19. **4th Annual Arkansas Undergraduate Research Conference**, Arkadelphia, AR, *Interfacing a Diode Laser Spectrometer with the LabVIEW Student Edition*, P. Williams, E. Barnett, B. Coomer-Cline and S.W. Reeve, April 12, 1997.
20. **5th Annual Arkansas Space Grant Consortium Symposium**, Fayettville, AR, *Interfacing a Diode Laser Spectrometer with the LabVIEW Student Edition*, P. Williams, E. Barnett, B. Coomer-Cline and S.W. Reeve, April 25, 1997.
21. **18th Annual University of Memphis Undergraduate Research Conference**, *Infrared Laser Spectroscopy of Jet Cooled Molecules*, A. Bednar, C. Lindsey, P. Williams, E. Barnett and S.W. Reeve, Feb. 28, 1998.
22. **18th Annual University of Memphis Undergraduate Research Conference**, *Interfacing an Infrared Diode Laser Spectrometer with LabVIEW*, P. Williams, A. Bednar, E. Barnett and S.W. Reeve, Feb. 28, 1998.
23. **82nd Annual Meeting of the Arkansas Academy of Science**, *Interfacing an Infrared Diode Laser Spectrometer with LabVIEW*, P. Williams, A. Bednar, E. Barnett and S.W. Reeve, Little Rock, AR, April 4, 1998.
24. **82nd Annual Meeting of the Arkansas Academy of Science**, *Infrared Laser Spectroscopy of Jet Cooled Manganese Pentacarbonyl Halides*, C. Lindsey, A. Bednar, P. Williams, E. Barnett, M. Draganjac and S.W. Reeve, Little Rock, AR, April 4, 1998.
25. **82nd Annual Meeting of the Arkansas Academy of Science**, *Infrared Laser Spectroscopy of Jet Cooled Molecules*, A. Bednar, C. Lindsey, P. Williams, E. Barnett, M. Draganjac and S.W. Reeve, Little Rock, AR, April 4, 1998.
26. **5th Annual Arkansas Undergraduate Research Conference,** *Laser Spectroscopy and LabVIEW Control: A Powerful Instrumental Combination***,** P. Williams, and S.W. Reeve, Arkadelphia, AR, April 17, 1998.
27. **5th Annual Arkansas Undergraduate Research Conference,** *Infrared Spectroscopy of Jet Cooled Manganese Pentacarbonyl Chloride,* C. Lindsey and S.W. Reeve, Arkadelphia, AR, April 17, 1998.
28. **5th Annual Arkansas Undergraduate Research Conference***, Infrared Spectroscopy of Jet Cooled Manganese Pentacarbonyl Bromide*, A.J. Bednar and S.W. Reeve, Arkadelphia, AR, April 17, 1998.
29. **6th Annual Arkansas Space Grant Consortium Symposium**, *Interfacing an Infrared Diode Laser Spectrometer with LabVIEW*, P. Williams and S.W. Reeve, Little Rock, AR, April 24, 1998.
30. **6th Annual Arkansas Space Grant Consortium Symposium**, *Chemical and Physical Properties of Transition Metal Carbonyl Compounds*, A. Bednar, C. Lindsey, P. Williams, M. Draganjac and S.W. Reeve, Little Rock, AR, April 24, 1998.
31. **6th Annual Arkansas Space Grant Consortium Symposium**, *Chemical and Physical Properties of Transition Metal Carbonyl Compounds*, C. Lindsey, A. Bednar, P. Williams, M. Draganjac and S.W. Reeve, Little Rock, AR, April 24, 1998.
32. **53rd Ohio State International Symposium on Molecular Spectroscopy**, Columbus, OH, *A Microwave Study of Partially Bound H20-BF3*, M.E. Ott, D.L. Fiacco, S.R. Weers, T. Howe, S.W. Reeve, C.J. Cramer, and K.R. Leopold, Friday, June 19, 1998.
33. (*Invited Talk*) **Missouri Western State College Chemistry Department Seminar**, St. Joseph, MO, *Infrared Spectroscopy of Jet Cooled Gases*, March 5, 1999.
34. **6th Annual Arkansas Undergraduate Research Conference**, Arkadelphia, AR, *Infrared Spectroscopy of Jet Cooled Organometallics*, Alan Ford, S.W. Reeve, and M. Draganjac, April 24, 1999.
35. *(Invited Talk)* **University of Mississippi Chemistry Department Seminar**, Oxford, MS, Infrared Laser Spectroscopy of Jet Cooled Iron Pentacarbonyl, March 24, 2000.
36. **84th Annual Meeting of the Arkansas Academy of Science,** Hot Springs, AR, *Infrared Laser Spectroscopy of Jet Cooled Iron Pentacarbonyl*, A. Ford and S.W. Reeve, April 8, 2000.
37. **85th Annual Meeting of the Arkansas Academy of Science,** Conway, AR*, Non-Commercial Software for the Analysis and Interpretation of High Resolution Molecular Spectra*, A. Ford and S.W. Reeve, April 14, 2001.

38. **85th Annual Meeting of the Arkansas Academy of Science**, Conway, AR, *On-the-fly TIme Resolved Fluorescence Spectroscopy Concurrently at Multiple Emission Wavelengths*, Pam Ramage, S.W. Reeve, Mike Dvorak, and Greg Gillispie, April 14, 2001.
39. *(Invited Talk)* **University of Arkansas Chemistry Department Seminar**, Fayetteville, AR, Infrared Laser Spectroscopy of Jet Cooled Organometallics, October 15, 2001.
40. **25th Annual SAACS Area Collegiate Chemistry Meeting**, University of Tennessee at Martin, *The Quantum Mechanics of Catfish Farming*, Steven Stroud, Amanda Gillion, JR Wyatt, Robert Engleken, Gustsavo Rehder, and S.W. Reeve, April 13, 2002.
41. **87th Annual Meeting of the Arkansas Academy of Science**, Fayetteville, AR, *Rotational Analysis of Several Vibrational Bands of Cobalt Tricarbonyl Nitrosyl*, K.S. Trauth, W.A. Burns and S.W. Reeve, April 4, 2003.
42. **38th Midwest Regional Meeting of the American Chemical Society**, Columbia, MO, *Infrared Diode Laser Spectroscopy of Pyridine in a Jet and a 200 m Herriott Cell*, Kyle S. Trauth, Ginger M. Berry, William A. Burns and S. W. Reeve, November 6, 2003.
43. **Joint SE/SW Regional ACS Meeting,** Memphis, TN *Infrared Laser Spectroscopy of Jet Cooled Organometallics* , .M. Bryant, S. W. Reeve, Alan Ford, Ginger Berry, Kyle Trauth and W.A. Burns, November 2005.
44. **Joint SE/SW Regional ACS Meeting,** Memphis, TN *Observation and Analysis of Rotation-Vibration Spectra of N_2O: A Physical Chemistry Experiment* , .M. Bryant, S. W. Reeve, and W.A. Burns, November 2005.
45. **Joint SE/SW Regional ACS Meeting,** Memphis, TN *Observation and Analysis of CO_2 Rovibrational Spectra in the Physical Chemistry Laboratory,* L. Heard, A. Nuygen, S. W. Reeve, and W.A. Burns, November 2005.
46. *(Invited Talk)* **University of Arkansas Chemistry Department Seminar**, Fayetteville, AR, *Diode Laser Spectroscopy: From Fundamental Measurements to Environmental Sensing*, April 21, 2006.
47. **SPIE Defense and Security Symposium**, Orlando, FL, *Sensing and Characterization of Explosive Vapors near 700 cm^{-1}*, Alan Ford and S.W. Reeve, April 11, 2007.
48. **Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) 2007**,Memphis, TN, *Molecular Spectroscopic Measurements of VOC found in Explosive Vapors*, Alan Ford, Tabetha Osborne, Sindhu Kaimal, and Scott Reeve, October 18, 2007.
49. **SPIE Defense and Security Symposium**, Orlando, FL, *Spectral Signatures for TNT and RDX-based Explosives***,** T. Osborn, S. Kaimal, A.R. Ford, W. Burns and S.W. Reeve, March 19, 2008.
50. *(Invited Talk)* **Carroll College**, Waukesha, WI, *Explosive Detection with an Optical Nose*, April 2, 2008.
51. *(Invited Talk)* **Carroll College**, Waukesha, WI, *Graduate Research at Arkansas State University: A Tale of Two Tops*, April 2, 2008.
52. **64th SW Regional Meeting of the American Chemical Society**, Little Rock, AR, *High Resolution Spectral Signatures for TNT-based Explosives*, T. Osborn, S. Kaimal, J. Casuey, A. Ford, W. Burns, and S.W. Reeve, October 2, 2008.
53. **64th SW Regional Meeting of the American Chemical Society**, Little Rock, AR, *High Resolution Infrared Spectroscopy of the CH Stretching Bands in Acetaldehyde*, T. Osborn, S. Kaimal, W. Burns, and S.W. Reeve, October 2, 2008
54. **SPIE Defense and Security Symposium**, Orlando, FL, *Optical detection of explosives: spectral signatures for the explosive bouquet***,** Tabetha Osborn, Sindhu Kaimal, Jason Causey, William Burns and Scott Reeve, April 2009.
55. **SPIE Defense and Security Symposium**, Orlando, FL, *Measurement of ammonia skin gas using a mid-infrared Pb-salt tunable diode laser*, Trocia N. Clasp, Sindhu Kaimal, Scott W. Reeve*, William A. Burns, 2010
56. **SWRM and SERMACS 2010**, New Orleans, LA, *Spectroscopic Analysis of the vapor above a polyisobutylene sample*, T.N. Clasp and S.W. Reeve , December 2010.
57. **SWRM and SERMACS 2010**, New Orleans, LA, *Analysis of the rotational structure in the ν_7 band of isobutylene*, T.N. Clasp, S. Kaimal, W.A. Burns and S.W. Reev, December 2010.
58. **66th Ohio State International Symposium on Molecular Spectroscopy**, Columbus, OH, *Cavity Ringdown Laser Absorption Spectroscopy of Isotopically Labelled Acetylene between 12500-13600 cm^{-1},* C.J. Lue, M.N. Sullivan, M.E. Draganjac, and S.W. Reeve, June 21, 2011.
59. **67th Southwest Regional Meeting of the American Chemical Society**, Austin, TX, *Determination of methane and OCS ambient air concentrations in Jonesboro, AR*, S. Kaimal and S.W. Reeve, November 9, 2011.

60. *(Invited Talk)* **Eastern Analytical Symposium,** Somerset, NJ, *An optical nose approach to explosive detection*, Trocia N Clasp and S.W. Reeve, November 15, 2011.
61. **SciX 21012**, Kansas City, MO, *Spectroscopic Examination of the Volatile Organic Compounds Comprising the Bouquet of RDX-based Explosives,* Trocia Clasp, Tiffani Johnson, Michael Sullivan, Scott Reeve, Taylor Ingle, and Roger Buchanan, October 2012.

Poster Presentations

1. **201st Meeting of the American Chemical Society**, Boston, MA, *Vibrational Spectroscopy of the Weak Bond in ArHBr*, K.R. Leopold, D.W. Firth, M.A. Dvorak, S.W. Reeve, and R.S. Ford, April 25, 1990.
2. **ILS-VI Meeting of the American Physical Society**, Minneapolis, MN, *Far-Infrared Spectroscopy of Weakly Bound Systems: An Application to Hydrogen Halide Complexes*, M.A. Dvorak, S.W. Reeve, D.W. Firth, and K.R. Leopold, September 18, 1990.
3. **University of Minnesota Chemistry Minisymposium**, Minneapolis, MN, *Spectroscopic Probes of Intermolecular Interactions*, S.W. Reeve, M.A. Dvorak, and K.R. Leopold, November 3, 1990.
4. **10th Annual Spring Green Conference on Photochemistry**, Spring Green, WI, *Spectroscopic Probes of Intermolecular Potentials*, S.W. Reeve, M.A. Dvorak, and K.R. Leopold, February 13-15, 1991.
5. **183rd Meeting of the Electrochemical Society, Inc., 3rd International Symposium on Diamond Materials**, Honolulu, HI, *Chemistry and Diagnostics of a DC Arcjet Diamond CVD Reactor*, S.W. Reeve and W.A. Weimer, May 18, 1993.
6. **207th Meeting of the American Chemical Society**, San Diego, CA, *Probing the Molecular Processes in a DC Arcjet Diamond CVD Reactor*, S.W. Reeve and W.A. Weimer, March 16, 1994.
7. **1994 Gordon Research Conference on Diamond**, New Hampshire, *Chemistry in Microwave Plasma and DC Arcjet Diamond Reactors*, C.E. Johnson, W.A. Weimer, and S.W. Reeve, June 19-24, 1994.
8. **210th Meeting of the American Chemical Society**, Chicago, IL, *Optical Emission Spectroscopy as a Temperature Probe for a DC Arcjet Diamond CVD Reactor*,W.A. Weimer and S.W. Reeve, August 23, 1995.
9. **3rd Annual Arkansas Undergraduate Research Conference**, Arkadelphia, AR, *Construction of a Supersonic Plasma Jet*, J.T. Shipman and S.W. Reeve, April 20, 1996.
10. **212th Meeting of the American Chemical Society**, Orlando, FL, *High Resolution Spectroscopy in a Supersonic Plasma Jet*, J.T. Shipman, P. Williams, B. Coomer, E. Barnett and S.W. Reeve, August 27, 1996.
11. **214th Meeting of the American Chemical Society,** Las Vegas, NV, *High Resolution Laser Spectroscopy in a Pulsed Discharge Supersonic Jet*, A. Bednar, P. Williams, M. Draganjac and S.W. Reeve, Sept. 7, 1997.
12. **215th Meeting of the American Chemical Society**, Dallas, TX, *High Resolution Infrared Spectroscopy of Manganese Pentacarbonyl Bromide*, A. Bednar, Candace Lindsey, P. Williams, M. Draganjac and S.W. Reeve, March 30, 1998.
13. **215th Meeting of the American Chemical Society**, Dallas, TX*, Infrared Laser Spectroscopy of Jet-Cooled Manganese Pentacarbonyl Chloride*, C. Lindsey, A. Bednar, P. Williams, M. Draganjac and S.W. Reeve, March 30, 1998.
14. **6th Annual Arkansas Undergraduate Research Conference**, Arkadelphia, AR, *Laser Spectroscopy of Organometallic Compounds*, Rebecca Jackson and S.W. Reeve, April 24, 1999.
15. **218th Meeting of the American Chemical Society**, New Orleans, LA, "Infrared Laser Spectroscopy of Jet-Cooled Organometallics,"A. Ford, M. Draganjac and S.W. Reeve, August 25, 1999.
16. **1999 Sigma Xi Forum**, Minneapolis, MN, *LabVIEW in the Undergraduate Physical Chemistry Laboratory*, November 4, 1999.
17. **220th Meeting of the American Chemical Society**, Washington, DC*, A Novel HPLC Detector: Generating on-the-fly Fluorescent lifetimes Concurrently at Multiple Emission Wavelengths*, S.W. Reeve, P.K. Ramage, M.A. Dvorak and G.D. Gillispie, August 20, 2000.
18. **27th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS)**, Nashville, TN, *A Novel HPLC Detector: Generating on-the-fly Fluorescent lifetimes Concurrently at Multiple Emission Wavelengths*, S.W. Reeve, P.K. Ramage, M.A. Dvorak and G.D. Gillispie, September 24, 2000.
19. **52nd Southeast/56th Southwest Combined Regional Meeting of the American Chemical Society**, New Orleans, LA, *Rotationally Resolved Infrared Spectrum and DFT Study of Iron Pentacarbonyl*, A. Ford and S.W. Reeve, December 6, 2000.
20. **52nd Southeast/56th Southwest Combined Regional Meeting of the American Chemical Society**, New Orleans, LA, *Analysis of C2 LIF Spectrum in a DC Arcjet CVD Reactor: Determination of Plasma Gas Temperature*, J.T. Shipman, W.A. Weimer and S.W. Reeve, December 6, 2000.

21. **52nd Southeast/56th Southwest Combined Regional Meeting of the American Chemical Society**, New Orleans, LA, *Infrared Analysis of Combustion Kiln Gases*, K. Trauth, A. Busby, R. Gill, W.A. Burns and S.W. Reeve, December 8, 2000.
22. **34th Great Lakes Regional Meeting of the American Chemical Society**, Minneapolis, MN, *Quantum Mechanics of Fish Farming*, Lonnie Crosby, Amanda Gillion, Steven Stroud, JR Wyatt, Robert Engelken, Gustsavo Rehder, and S. W. Reeve, June 2, 2002.
23. **34th Great Lakes Regional Meeting of the American Chemical Society**, Minneapolis, MN, *Rotationally Resolved Infrared Diode Laser Spectroscopy of Jet Cooled Organometallics*, Alan Ford, Kyle Trauth, and S. W. Reeve, June 2, 2002.
24. **34th Great Lakes Regional Meeting of the American Chemical Society**, Minneapolis, MN, *Global Analysis of Multi-Dimensional LIF-HPLC Data: Resolving Peak Overlap Via Fluorescence Lifetimes at Multiple Emission Wavelengths*, Michael Dvorak, Gregory Gillispie, Scott Reeve, and Thomas Gonnella, June 2, 2002.
25. **225th Meeting of the American Chemical Society**, New Orleans, LA*, Infrared Diode Laser Spectroscopy of Jet Cooled Organometallics*, Kyle S. Trauth, William A. Burns, and S.W. Reeve, March 26, 2003.
26. **2003 BRIN Research Symposium**, Fayetteville, AR*, Infrared Diode Spectroscopy at Arkansas State University*, Kyle S. Trauth, Ginger M. Berry, William A. Burns, and S.W. Reeve, September 19, 2003.
27. **CUR 10th National Conference**, La Crosse, WI, K.S. Trauth, T.A. Moss, W.A. Burns, and S.W. Reeve, *High Resolution Molecular Spectroscopy at Arkansas State University*, June 24, 2004.
28. **234th Meeting of the American Chemical Society**, Boston, MA*, Vapor characterization and explosive detection near 700 cm-1*, Scott Reeve, Tabetha Osborne, Sindhu Kaimal, and Alan Ford, August 22, 2007.
29. **SPIE Defense and Security Symposium**, Orlando, FL, *Spectral Signatures for RDX-based Explosives in the 3 Micron Region***,** T. Osborn, S. Kaimal, W. Burns and S.W. Reeve, March 19, 2008.
30. **64th SW Regional Meeting of the American Chemical Society**, Little Rock, AR, *Development of Synthetic Spectra to Aid in the Analysis of Observed High Resolution Spectra,* Joshua Green, W. Burns, and S.W. Reeve, October 2, 2008.
31. **64th SW Regional Meeting of the American Chemical Society**, Little Rock, AR, *A Low Cost Raman Spectrometer,* Michael Sullivan, T. Osborn, W. Burns, and S.W. Reeve, October 2, 2008.
32. **SWRM and SERMACS 2010**, New Orleans, LA, *FT Spectroscopy of sodium vapor: confirmation of a pressure related signal enhancement*, T. Johnson, J. Hicks, C. Tanjaroon, J.B. Johnson, and S.W. Reeve, December 2010.
33. **SPIE Defense and Security Symposium**, Orlando, FL, *Rotationally resolved infrared spectra of the explosive bouquet compounds associated with C4 explosives***,** Trocia N. Clasp, Tiffani Johnson, Michael Sullivan and S.W. Reeve, April 2011.
34. **SciX 2012**, Kansas City, MO, *Application of a Multistage Algorithm to a Floppy Molecule: normal mode assignments of 2-ethyl-1-hexanol***,** Trocia N Clasp, Tiffani Johnson, Michael Sullivan, Scott Reeve and Hideya Koizumi, October 2012.

Other Presentations

1. (*Invited Talk*)**University of Minnesota Chemistry Department Lando Seminar**, Minneapolis, MN, *Microwave Spectroscopic Probes of Chemical Reactions*, July 17, 1991.
2. (*Invited Talk*)**Chemistry Division Seminar**, China Lake, CA, *Far Infrared and Microwave Spectroscopic Studies of Weakly Bound Molecular Complexes: Potential Energy Surfaces and Internal Dynamics*, December 12, 1992.
3. (*Invited Talk*)**Arkansas State University Biology Departmental Seminar**, Jonesboro, AR , *High Resolution Spectroscopic Studies of Free Radicals*, March 30, 1995.
4. (*Invited Talk*)**Arkansas State University Sigma Xi Seminar**, Jonesboro, AR, *From Methane Gas to Diamond Thin Films: Understanding the Chemical Vapor Deposition Process*, April 13, 1995.

Professional Affiliations

American Chemical Society, American Vacuum Society, Society for Applied Spectroscopy
Society for Photonics and Instrumentation Engineering (SPIE)

Thesis Supervised

MS Chemistry Students

1. **Eric Barnett**, *High Resolution Infrared Spectroscopy in a Supersonic Plasma Jet*, December 1998.
2. **Alan Ford**, *Infrared Spectroscopy of Jet Cooled Iron Pentacarbonyl*, May 2001.
3. **Mark Bryant,** *Infrared Spectroscopy of N_2O and Jet Cooled Organometallics*, August 2006.
4. **Nisana Andersen**, *Commissioning an In-House Diode Seeded Alexandrite Laser Spectrometer*, August 2007.
5. **Ginger M. Berry**, *Infrared Diode Laser Spectroscopy of Jet Cooled Cobalt Tricarbonyl Nitrosyl*, May 2008.
6. **Michael N. Sullivan**, *Cavity Ringdown Laser Absorption Spectroscopy of Acetylene,* May 2011.
7. **Brent Yount**, *Desorption of Volatiles from Solid Phase Micro-Extraction using an Nd:YAG Laser,* May 2011.
8. **Tabetha Osborn**, *Infrared Sensing of Isobutylene*, May 2012
9. **Zach Guttman**, May 2012-present

Senior Honors Thesis Students

1. **Tony Bednar**, *Infrared Diode Laser Spectroscopy of Jet Cooled Transition Metal Molecules*, May 1998.
2. **Tiffany Moss**, *Cavity Ringdown Laser Spectroscopy*, August 2004.
3. **Kyle Trauth**, *Infrared Laser Spectroscopy of Jet Cooled Organometallics*, August 2004.

Total Graduate Research Students: 9
Total Undergraduate Research Students: 17

CURRICULUM VITAE

Benjamin L. Rougeau, D.V.M
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Instructor

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Education

Louisiana State University Veterinary Medicine D.V.M., 1985
Arkansas State University Bachelors of Science in Agriculture, 1985
Arkansas State University Bachelors of Science in Chemistry, 1995
Arkansas State University Chemistry Master of Science, 1997

Master's Thesis: *The Selected Thermal Decomposition of Transition Metal Polysulfides.*
Department of Chemistry and Physics, Arkansas State University.
Advisor: Professor Mark Draganjac.

Professional Experience

Instructor: Arkansas State University 2009-Present
Assistant Radiation Safety Officer Arkansas State University 2005-Present
Research Assistant, Chemistry Arkansas State University 1999-2009
Radiation Safety Officer Arkansas State University 1999-2005
Stockroom Manager Arkansas State University 1993-1999

Specific Courses Taught

2007-Present, Arkansas State University, Department of Chemistry and Physics
(Course reviews are included in Appendix I).

Lecture:
CHEM 1013 - General Chemistry I. Fall 2007 (57 students), Spring 2012 (126).
CHEM 1023 - General Chemistry II. Spring 2008 (71), Spring 2009 (65), Summer 2011 (20)
CHEM 1052- Fundamentals Concepts of General Chemistry II. Fall 2010 (19)

Laboratory:
CHEM 1011 - General Chemistry I Laboratory, Fall 2008 (51), Fall 2009 (243), Spring 2010 , Summer 2010 (30), Fall 2010 (300), Spring 2011 (240), Summer 2011(20).
CHEM 1021 - General Chemistry II Laboratory, Fall 2008 (60), Fall 2009 (75), Spring 2010 (120), Summer 2011(20).

Awards for Service

Dean's Distinguished Staff Achievement Award presented by the College of Sciences and Mathematics, 2006-2007.

Outstanding Support Staff Performance presented by the ASU College of Science and Mathematics, 13 April 2005.

Student Affairs Hero from the Division of Student Affairs of Arkansas State University, 2004.
Most Valuable Person presented by the local student affiliate Student Chapter of the American Chemical Society

Publications (Peer –Reviewed)

1. Grippo, A.A., Capps, K., **Rougeau, B.**, Gurley, B.J. 2007. Analysis of flavonoid phytoestrogens in botanical and ephedra-containing dietary supplements. Ann. Pharmacother. 41:1375-82.

2. Grippo, A.A.(PI), Lou Y., **Rougeau B.**, and. Wyatt, W.V. 2000. HPLC analysis of mono-saccharides in whole and regional, staged bovine oviductal fluid. Theriogenology 35:717-721.

3. Grippo, A.A., Luo, Y., **Rougeau, B.**, Wyatt, W.V. 2000. HPLC analysis of mono-saccharides in whole and regional, staged bovine oviductal fluid. Theriogenology. 35:717-721.

4. Grippo, A.A.(PI), Xie, Y., **Rougeau, B.**, and Wyatt, W.V. 1999. Analysis of phytoestrogens by high pressure liquid chromatography. J AR Acad. Sci. 53:61-66.

Publications (Non-Peer Reviewed)

1. **Rougeau, B.** and R. Warby. 2010 General Chemistry I and II Laboratory Manual (26 Individual Laboratories, ~ 200 pp), Department of Chemistry & Physics.

Poster Presentations (National)

1. Burns, W., Kennon, T., Draganjac, M., Panigot, M., Ontko, A., Koizumi, H., Warby, R.A.F., Cron, S., **Rougeau, B.** Pre- and post-assessment of general chemistry students. *240th ACS National Meeting*. August 22-25, 2010. Boston, Massachusetts, U.S.A.

Conference Platform Presentations

1. Woodard, A.M., Warby, R.A.F., **Rougeau, B.**, and Marsico, T.D. Identification of cactus derived volatile organic compounds induced by cactus boring moth herbivory using SPME sampling and GC/IT-MS analysis. *Entomological Society of America, Southeastern/Southwestern Joint Annual Meeting*, March 4-7, 2012, Little Rock, AR.

2. Capps, K., **Rougeau, B.**, Gurley, B., and Grippo, A. Bioflavonoids in herbal supplements. Southern Regional Discussion Group, Amer. Assoc. Pharm. Sci. (2003).

3. Luo, Y., **Rougeau, B.**, Wyatt, W., and Grippo, A. Availability of monosaccharides in whole and regional, staged bovine oviductal fluid. Biol. Reprod. 60 (Suppl. 1):158 (1999).

4. Grippo, A.A., Xie, **Y.**, **Rougeau, B.**, and Wyatt, W.V. Analysis of phytoestrogens by high pressure liquid chromatography. Proc. AR Acad Sci.: 92 (1999)

Grants

1. Bouldin, J.L., Warby, R.A.F. (Co-PI/PD), **Rougeau, B. (Senior Personnel)**. 2010-2013. **($296,917)** NSF MRI: Acquisition of a GC/MS to Facilitate Interdisciplinary Ecotoxicological and Analytical Research and Teaching at Arkansas State University. (NSF# CBET-1040466)

2. Warby, R.A.F. (PI), Benjamin, E., Koizumi, H., Ali, H., Burns, W., and **Rougeau, B. (Co-PI)**, 2010-2011. (**$3,000**) National Center for Science and Civic Engagement Post-Institute Implementation SENCER NSF 2010-2012 Sub-Awards.

3. Green, Steve, Bouldin, Jennifer, Hannigan, Robyn, Christian, Alan and **Rougeau, B. (Senior Personnel)** 2007-2010. ($**190,835**) National Science Foundation – MRI: Acquisition of biogeochemical analytical instrumentation for enhanced interdisciplinary research and training at Arkansas State University

Committee Service

Search Committee Member for position of Dean of Arts and Science, 2009.

Radiation Safety Committee Member, 2005- present.
Performed leak tests quarterly.
Coordinated removal of Neutron Howitzer and additional excess isotopes
Served as acting RSO during vacation times for RLJ – 2 weeks/yr
Assisted in application and revision process in license renewal- 2009 and 2011-2012

Synergistic Activities

SENCER: For the 2011-12 academic years, SENCER participants chose a locally-relevant environmental project. The students collected soil samples which will be analyzed by the students throughout their undergraduate career at ASU. These samples will be subject to more detailed and technically difficult analyses as the student's progress from their freshman through their senior years.

STEM-EETT Participant 2009-2011: I am working with high school teachers at Nettleton High School in Jonesboro, AR on a STEM Enhanced Education Through Technology grant in the areas of Chemistry, Earth/Environmental Science, and Statistics.

Community Service

Judge Overall Senior Division and Category Judge 2005-2012: Northeast Arkansas Regional Science Fair

Science Olympiad: Working with Karen Ladd at Nettleton High School to prepare students for state and national competition.

Advance Placement Teacher Works Shop: Provide technical and laboratory support for chemistry\, botany and biology teacher workshop.
Concepts in Chemistry (Mathematics and Science Partnership Program 2009): Provide technical and laboratory support for the teacher workshop. Spring and Summer 2011.

Technical Skills and Training

Completed a high-end specialized course in the operation and data analysis for Inductively Coupled Plasma Mass Spectrometry (ICPMS)
Development of a customized heated transfer line interface between a Varian Gas Chromatograph and a Perkin Elmer ICPMS
Trained in the use, troubleshooting, and maintenance of the following instruments:
Electron Beam Analysis: Scanning electron microscopy
Atomic Absorption: Flame and graphite furnace analysis
Gas Chromatography Mass Spectrometry**
High Pressure Liquid Chromatography**
Ion Chromatography
Multi-Channel Analyzer for identification of radioisotopes
Seismology station equipment assembly and installation
***Professional evaluations of onsite service performance is obtainable on request from Doug Brogan of Dionex and Jeff Curry of Agilent.*

Duties as Instructor of Chemistry and Physics

Oversee General Chemistry laboratories operation, adjust laboratory curriculum to support the topics presented in the General Chemistry Lecture series.
Supervise teaching assistance for General Chemistry I, II and Quantitative Analysis,
Provide supportive information and assistance in the preparation of materials for all teaching laboratories.
Provide assistance in teaching vacancies.
Assistant with the development of laboratory exercises used in general chemistry I and II, along with Fundamental Chemistry I.
Develop new online materials.

Additional Departmental Assignments

Maintain and trouble shoot research and teaching instrumentation.
Assist in purchasing, setup and instillation of new equipment
Coordinate Laboratory remolding, development of laboratory contingency operations for LSE 402 and LSE 518, May 2010- May 2011
Maintain chemical storage for the department, LSE 518
Support for teaching, laboratory and classroom computer/projector systems.
Add in safety prevention and the correction of safety violation.

Duties as Assistant Radiation Safety Officer

Performed leak tests quarterly.
Coordinated removal of Neutron Howitzer
Served as acting RSO during vacation times for RLJ – 2 weeks/yr
Assisted in application and revision process for 5-year license renewal- 2009 and 2011-2012

Appendix III
Course and Instructor Evaluation Instrument

Project Name

Course: Course Title
Instructor: Instructor Name

1- I am classified as a:

- Freshman
- Sophomore
- Junior
- Senior
- Graduate

2- My gender is:

- Female
- Male

3- How old are you?

- less than 17
- 17-20
- 21-24
- 25-28
- 29-32
- more than 32

4- When were you last enrolled in college?

- This is my first semester of college
- Within the last year
- Two years ago
- Three years ago
- Four years ago
- It has been more than five years

5- In what college is your major?

- Agriculture and Technology
- Business
- Communication
- Education
- Engineering
- Fine Arts
- Humanities and Social Sciences
- Nursing and Health Professions
- Sciences and Mathematics

- University College

6- If your answer to question 5 was the College of Sciences and Mathematics, in what department is your major?

- Biology
- Chemistry and Physics
- Computer Science
- Mathematics and Statistics

7- The Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
clearly defined and described course expectations					
followed these course expectations					
clearly identified learning objectives for each chapter/unit					
maintained control of the classroom (i.e. maintained a classroom environment conducive to learing)					
was approachable and respectful					
explained material clearly					
was receptive to student questions and concerns during class					
was receptive to student questions and concerns outside of class					
provided answers to student questions and concerns at an appropriate level of understanding					

8- How could the instructor alter their teaching style to improve the classroom learning experience?

9- If a friend asked you to describe this instructor's ability to teach, what would you say?

10- Indicate how important each of the following was to achieving your current level of performance in this course:

	not at all	just a little bit	somewhat	a lot	essential
Attending lecture	○	○	○	○	○
Reading the textbook	○	○	○	○	○
Completing assignments	○	○	○	○	○
Talking with other students	○	○	○	○	○
Talking with the instructor outside of class	○	○	○	○	○

11- How often did you:

	never	once a week	several times a week	every day
Attend lecture	○	○	○	○
Read the textbook	○	○	○	○
Complete assignments	○	○	○	○
Talk with other students	○	○	○	○
Talk with the instructor outside of class	○	○	○	○

12- On average, how much time outside of class did you dedicate to studying for this course?

- ○ 0 to 3 hours per week
- ○ 3 to 6 hours per week
- ○ 6 to 9 hours per week
- ○ 9 to 12 hours per week
- ○ more than 12 hours per week

13- Considering the grade you would like to earn in this course and the amount of out of class studying you indicated in question 12, which of the following is most accurate?

- ○ I should have studied less
- ○ I studied the correct amount
- ○ I should have studied more

14- The level of difficulty of this course is:

- ○ very easy
- ○ Easy
- ○ Moderate
- ○ Difficult
- ○ Impossible

15- Do you think the material presented in this course will be useful or necessary in other classes?

- ○ No
- ○ Yes

16- What grade do you feel you **deserve** in this course?

- ○ A
- ○ B
- ○ C

- D
- F

17- Describe any changes that should be made to improve this course.

18- What advice would you give to a friend taking this course next semester?

Appendix IV
Alumni Survey Instrument

Project Name

Course: Course Title
Instructor: Instructor Name

1- **First Name** (optional)

2- **Last Name** (optional)

3- **What is the highest level chemistry or physics degree you earned from ASU?**

- Physics bachelors degree
- Chemistry bachelors degree
- Chemistry masters degree

4- **What year did you earn this degree?**

2012 2011 2010 2009 2008 2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995 1994 1993 1992 1991 1990 prior to 1990

5- **Did you earn a higher degree from another institution after leaving ASU?**

- Yes
- No

If you responsed "Yes" to question 5 please answer questions 6-9, otherwise continue with question 10.

6- **Degree earned:**

7- **Field:**

8- **Institution:**

9- **What year did you earn this degree?**

2012 2011 2010 2009 2008 2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995 1994 1993 1992 1991 1990

10- **How long have you been in your current position?**

- More than 10 years
- 8-10 years
- 6-8 years
- 4-6 years

- 2-4 years
- 1-2 years
- Less than a year

11- **What best describes your current position?** (select all that apply)

- Teaching
- Health related (inlcuding pharmacy, physician, chiropractor, dentist....)
- Sales
- Industry
- Management
- Research
- College/University
- K-12
- State government
- Federal government

12- **<u>While at ASU</u>, what were your long term plans once graduating from ASU?**

- Seek employment
- Continue employment with current employer
- Apply to graduate school
- Apply to pharmacy school
- Apply to medical school
- Apply to dental school
- Apply to optometry school
- Apply to chiropractic school
- Apply to physician assistant program
- Apply to a program/school other than listed above
- Other

13- **What did you <u>actually do</u> immediately after graduating from ASU?**

- Seek employment
- Continue employment with current employer
- Apply to graduate school
- Apply to pharmacy school
- Apply to medical school
- Apply to dental school
- Apply to optometry school
- Apply to chiropractic school
- Apply to physician assistant program
- Apply to a program/school other than listed above
- Other

14- **How much did your ASU degree(s) contribute to your current state of:**

	1 Not at all	2	3	4	5	6	7 A great amount
Chemistry or physics knowledge							
Oral communication skills							
Written communication skills							
Ethical standards							
Laboratory skills							
Laboratory saftey skills/awareness							
Ability to use common laboratory instruments							
Computer skills							
Problem-solving skills							
Ability to work as a member of a team							

15- **Looking back on the chemistry or physics degree(s) you earned from ASU, what aspects of the degree programs were most beneficial in the development of the skill set you have needed since graduating?**

16- **Looking back on the chemistry or physics degree(s) you earned from ASU, what aspects of the degree programs should have been modified to better equip you with the skill set you have needed since graduating?**

17- **Please provide any additional comments you would like to inlcude.**

Responses To Selected Survey Questions From Alumni Earning a Baccalaureate Chemistry Degree	
Looking back on the chemistry or physics degree(s) you earned from ASU, what aspects of the degree programs were most beneficial in the development of the skill set you have needed since graduating?	**Looking back on the chemistry or physics degree(s) you earned from ASU, what aspects of the degree programs should have been modified to better equip you with the skill set you have needed since graduating?**
I would say that I had a very good background going into graduate school, with only a few exceptions (noted below). I do think I had more presentation experience due to the Chemistry Seminar course. A lot of other students coming into grad school didn't have a lot of experience in putting together presentations or actually presenting. Although, that meant that I was giving seminars from the first semester I was in grad school. I suppose that's a good thing. Also, I appreciated having more inquiry based labs accompanied by detailed lab reports in my upper level courses. That along with undergraduate research helped me when I was performing my own research and publishing results. Of course, the courses at ASU were very good. (With the exception of biochemistry, which I discuss briefly below.) Being in the analytical chemistry area, I hope that this division becomes more developed at ASU. I learned a lot in my courses, and only had deficiencies in a couple of areas. The rest of the areas were done very well and prepared me for future experience, both in graduate school and in non-academia.	There are only a few things I would recommend. I would say that the item in most need of improvement, which may have been made since I have left, is students getting more experience on laboratory instruments. Whether you go on to graduate school or get a job out in industry, knowledge and experience on instruments including, but not limited to, HPLC, GC/MS, NMR, and FTIR is very important. I would say that my hands-on experience was extremely limited and my instrumentation course didn't provide me the background I needed. I would also definitely recommend a class on reading spectra. As a graduate student, that was one of my deficiencies and I had to take a course solely on that subject. We covered UV-Vis, FTIR, proton NMR, C13 NMR, and GC-MS. And for graduate students, we went on to cover 2-D NMR and other advanced spectra. Also, I took biochemistry under Dr. Grippo. Her class covered biochem more from a biology perspective versus a chemistry perspective. When I went to graduate school, I heard a lot of "You should know this from undergraduate biochem...." Meanwhile, I had never heard of the topic before, much less was able to wax lyrical about it. As a chemistry class, she might want to include more chemistry.
Laboratory safety, computer skills, and communication skills were very beneficial. Also documentation. At every job I have had so far I am the best in documentation, communication skills, and computer skills. Thats because of the lab classes and the written work I had to do. It was hard to complete these tasks in college but I still remember these things and it has paid off in the workplace.	Laboratory skills, teacher/student relationship, and job placement. The program needs to prepare students more for the hands-on aspect of the science field. The relationship with students and professors needs to improve. I often felt like I could not talk to my professors or receive assistance. I was not the only student who felt like this. The professors were not bad, but for some reason we just felt like we could not talk to them causing us to feel lost sometimes. We had to often receive help from each other (students/friends). The program also needs to help students in getting jobs. It has been very hard (still after 4 years) in getting jobs in the science field. I know a couple of students that gave up and got out of the field in general. I am still in the field and plan to stay there because science is my passion but wished I had of had more assistance in finding jobs.
The lab classes were most beneficial to me.	Some of the professors were not very helpful.
The problem solving and computer/lab skills were most beneficial.	I felt the course selection counseling regarding choosing classes for the next semester were in need of major modification. Simple guidance from the counselor on how to get the credits required to graduate seemed to be a much harder task than it should have been.

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Small class size (and in my experience research team size) and knowing all the other chemistry majors in the department. This helps working in collaborative research projects now and leading a team effort. Working on group projects in these classes helped me develop problem solving and leadership skills that I use to this day. There will always be the slack-ass in the class that doesn't learn anything by leaching off others during group activities, but the benefits gained by the others during these exercises far outweigh this shortfall. Silly example, but to show point: To this day, I have yet to be caught in a position needing to spontaneously spout off (or derive) the Henderson-Hasselbach equation from memory, but knowing where to find it and who to ask help from if needed to make a buffer solution has been much more useful.	Funding is always going to be a limitation, but all efforts should be made to improving equipment. I now understand that the Chemistry Department has an ICP-MS and maybe an ICP-AES. These are tools I now use daily in my research and have since Graduate School. When I was at ASU, there was only a graphite furnace, and students weren't allowed to touch it, which greatly reduced what I was able to take out of even the 'Instrumental Analysis' class. A personal issue I have, as described above, was several classes (some by professors no longer there) were simple memorization exercises. I don't memorize well, but did enough to get through organic chemistry. I have no need to, but, if I want to know what 14 steps are required for a Grignard Reaction, I'll go look it up. My opinion is upper level classes should be preparing you for graduate school, which in many cases is self directed, or at least lead discussions and problem solving, more so that memorization for tests.
My studies in Chemistry were some of the most intensive I have received including Medical School. I learned valuable skills that helped me further my education and to reach my goals. The multiple instruments I worked with helped me in awareness of what goes into test that I asked to be run everyday.	My Biochemistry class was lacking. It was my biggest struggle during my medical school classes.
Physical chemistry. Available faculty.	Medical school pathway.
Surprisingly to me, I have benefited most from the laboratory experiences. Even routine experiments helped me gain knowledge of diverse equipment and multiple ways a procedure can be carried out. This has turned out to be very useful for a practicing chemist.	A more rigorous physical chemistry class and lab experience. A course in computer programming would have been helpful as well.
Analytical chemistry skills	Formulation of actual products, laboratory synthesis, etc.
The knowledge of chemistry itself. In other words, the classroom learning of terms, rules, laws, reactions, and the periodic table. The labs not so much.	Referencing the question above, I think the labs could have been much more beneficial. Most of the equipment was archaic and had no real application to a (then) modern chemistry laboratory. The experiments were applicable to the field in the year 1910.
Problem solving and team based learning.	BS chemistry students seeking to apply to medical school should be advised to take more biology classes such as A&P, microbiology, cell biology, histology and neurobiology.

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A knowledge of biochemistry has been extremely helpful in medical school.	Many of the topics discussed in higher level chemistry classes (inorganic chemistry, instrumentation, physical chemistry) are very important if one wishes to pursue a career in chemistry; however they are not particularly helpful to students who are going to attend medical school. That being said, I don't recommend altering the course load because it wasn't until I was in these classes that I actually learned to study and that is a skill that all medical students need.
Well...the Organic classes pretty much helped me survive the first year of pharmacy school. Biochem also helped, alot. And Dr. Burns way of teaching and testing was excellent preparation for the butt kicking I received once I got to UAMS.	It's been 6 1/2 years...I really can't think of anything glaring off the top of my head so I think you guys did a great job!
Lots of hands on experience	More opportunities for internships
Fundamental chemistry knowledge is the basis for establishing level of risk to employees in the workplace. Math skills utilized in chemistry and the basics of chemical reactions are critical elements in determining exposure potential. Chemical knowledge also provided me a "head start" in toxicology and I was able to progress faster because of my understanding of biochemistry.	At the time I attended there were no application type classes. Everything was pure chemistry. It would have been helpful to have a survey course at least in areas such as environmental chemistry, industrial hygiene, and/or toxicology.
The analytical capability that was developed through the rigor of my chemistry courses.	I would not have expected it, nor have thought to ask, but it would have been most helpful to have someone sit me down and really ask me hard questions about my future. When I graduated, I received my B.A. in Chemistry; looking back, I wish I would have just spend an extra half year to attain my B.S. in Chemistry. The skills sets learned would have been very helpful for me today.
The most beneficial undergraduate classes that have helped me in pharmacy school is the courses I took the Dr. Warby Quantitative Analysis, Biochemistry with Dr. Ontko, and genetics laboratory with Dr. Johnson, Chemistry II with Dr. Burns, and Descriptive Inorganic Dr. Warby. The extensive laboratory skills (laboratory reports) I learned from Dr. Warby will prove to be great assets next year in dispensing lab. Almost everything we have covered in the my first year pharmacy class, Dr. Onkto covered as well in undergrad. A combination of the study habits I learned from these courses have helped me be successful in pharmacy school.	Organic chemistry with Dr. Panigot and another professor who is no longer at the university were lacking. I am aware of some changes in that department already and I think that is tremendous. I have had to self teach myself organic throughout my first year as a pharmacy student and it wasn't impossible but it was hard coming from such a lacking back ground. I do hope in the future students are better prepared. I also feel like ASU Pre-Pharmacy club is lacking in that they do not host enough events or announcements for the student body.
Conducting undergraduate research, presenting research at both regional and national conferences, and assisting in teaching undergraduate labs.	
Definitely the problems solving aspects of physics and chemistry. The most important thing I could learn was the ability to think critically and derive an answer from select pieces of information.	Not sure I would change much. I had for the most part good professors who taught rigorous material.