Graduate Programs in Chemistry and Biochemistry

UNIVERSITY OF TEXAS ARLINGTON

2014 - 2015

Catalyze your Future!
Introduction

Welcome to the Department of Chemistry and Biochemistry at the University of Texas at Arlington. We are pleased to present this brochure to you, prospective graduate students, postdoctoral fellows, alumni, friends and colleagues around the world, to provide you with an overview of the outstanding programs and exciting research and training opportunities available in our department.

This University is a comprehensive research and teaching institution whose mission is the advancement of knowledge and the pursuit of excellence. The Department is committed to the promotion of lifelong learning through its academic and applied programs. Our Department has comprehensive research and training activities in many areas of chemistry and biochemistry. Our state-of-the-art research facilities, excellent faculty and support staff, combined with generous external funding and partnerships, allow advanced studies in all of these areas. We offer several advanced degree programs but the most innovative is the Ph.D. in Chemistry which includes career enrichment and internship opportunities. With such training, our graduates have had 100% success rates obtaining employment in their fields. The program is ideally suited for students interested in a career in chemical, pharmaceutical, and biotech industries, in government laboratories, or in academics.
Our Department has a tradition of excellence in education and training. It is exciting for our faculty to help students: From the initial contact; to progress through the selective admission procedure; through the rigors of modern courses; the presentation of oral seminars and proposals; to the challenging work of independent thesis research; and writing of dissertations and publications. It is a rewarding experience to observe a dedicated student grow from a probing beginner to a creative scientist who is able make significant contribution to the knowledge of his or her field. It has been satisfying to see graduates succeed in subsequent industrial, postdoctoral, government, and academic positions. Our Department provides the intellectual atmosphere, an individualized-mentoring, and all the help necessary for every aspect of that growth.

The University is located in the center of the economically and culturally vibrant Dallas - Fort Worth “Metroplex” and looks forward confidently to a bright future. We invite you to visit our department and meet with our faculty, visit our website, and/or call us with your inquiries (http://www.uta.edu/chemistry/; 817-272-3171).

The University

The University of Texas at Arlington (www.uta.edu) is a comprehensive research, teaching, and public service institution. With an enrollment of over 34,000 students, U.T. Arlington is the second largest of the 15 institutions in The University of Texas System and the 5th largest university in Texas. Founded in 1895, U.T. Arlington joined the University of Texas system in 1965. The student body has become increasingly diversified with students representing almost every state in the United States and more than 100 countries. Graduate students comprise approximately 25 percent of the total enrollment. The University has excellent sports and recreational facilities and a day care center available within the campus.
Location

The University of Texas at Arlington is located on a modern, 392-acre campus in the center of the Dallas/Fort Worth Metroplex, midway between Dallas (the nation’s 9th largest city) and Forth Worth ("where the west begins"), a 20 minute drive from either city. Arlington, with a population of over 380,000, is the 49th largest city and one of the fastest growing suburban areas in the United States.

The city of Arlington (www.ci.arlington.tx.us), home to The University of Texas at Arlington, was established in 1876 as a midway railroad stop between Dallas and Fort Worth. In the last several decades, Arlington has grown into the “Midway of the Metroplex”, and it is located just 16 miles from the Dallas-Fort Worth International Airport (DFW) (www dfwairport.com). Arlington residents enjoy more than 40 city parks, four multipurpose recreation centers and six public swimming pools located throughout the city. It is home to the Texas Rangers (www.texasrangers.com) baseball team who play in the Rangers Ballpark at Arlington. It is also home to the Dallas Cowboys (www.dallascowboys.com) who play in AT&T Stadium. Both the Ballpark and AT&T Stadium are located only a few miles from the U.T. Arlington campus.

Dallas, located 15 miles to the east, claims the NBA’s Dallas Mavericks (www.nba.com/mavericks/) and the NHL’s Dallas Stars (www.dallasstars.com). Both teams play at the American Airlines Center (www.americanairlinescenter.com) in downtown Dallas. Additionally, the city’s Morton H. Meyerson Symphony Center (www.dallassymphony.com) ranks among the elite orchestral halls of the world.

Fort Worth, a 20-minute drive to the west, offers visitors a look at "where the west begins" at the Stockyards National Historical District (www.fortworthstockyards.org) (pictured below). In Fort Worth, cowboys and other residents meet and compete at the nation’s premier equestrian center and the Cattleman's Museum. They
also enjoy world-class culture at the renowned Bass Performance Hall (www.basshall.com), the Kimbell Art Museum (www.kimbellart.org) (which features works by Rembrandt, Cezanne and Picasso), the Amon Carter Museum of American Art (www.cartermuseum.org), and the Modern Art Museum of Fort Worth (www.mamfw.org).

Outdoor recreational activities in the area are enhanced by numerous lakes (suitable for both fishing and water sports), hiking trails and nature centers. Arlington and the surrounding cities also have an extensive and exciting night life. With a total population over 6.5 million, the proximity of urban centers is particularly advantageous for spouses of graduate students who wish to work, since career opportunities of all descriptions are available within the region.
Department of Chemistry and Biochemistry

The Department is housed in the Chemistry and Physics Building (CPB), which opened in 2006, the Chemistry Research Building (CRB) (circa 1996), and Science Hall (SH), which is newly renovated. Each of these buildings is specifically designed with sophisticated laboratories and state-of-the-art infrastructures for performing high quality research and teaching in the field of Chemistry and Biochemistry. The steady growth of the program, has led to development of new laboratory spaces and hence the new buildings.

The University of Texas at Arlington’s Chemistry and Biochemistry currently includes 19 full-time research-active faculty members. Each year it averages approximately two dozen postdoctoral fellows and visiting faculty. The Department currently has over three million dollars per year in external grant support.

An extensive seminar program allows a variety of scientists from this country and abroad to visit our campus and interact with our faculty, postdoctoral fellows, and students.
Graduate Programs

The Department offers graduate programs leading to both M.S. and Ph.D. degrees in Chemistry. The Ph.D. degree is unique in that all of our doctoral students are required to participate in career advancement or internship opportunities. Graduate degrees are also available through interdisciplinary programs in materials science and engineering, as well as in environmental and earth sciences. A special program has also been designed for industry professionals to pursue a Ph.D. degree part-time in a cooperative manner with the student’s employer.

After entering the graduate program, students are counseled by the Graduate Advisor and generally take 9 hours of course work and/or research per semester. During the first semester, students are encouraged to discuss research topics with faculty members in their areas of interest so that they may choose a research supervisor and begin their research. New students will enroll in a one credit course their first semester, in which all of the departmental faculty will present their research interests.

Ph.D. in Chemistry

The Department offers the degree Doctor of Philosophy (Ph.D.) in Chemistry which is designed to better prepare doctoral level chemists to enjoy productive careers in industrial laboratories, government laboratories or academic institutions. In addition to the traditional Ph.D. curriculum, this program emphasizes that the student acquire the working knowledge of the type of research conducted in other institutions of research (government, industry, international, etc.) and of the constraints (both practical and philosophical) under which it is carried out.
To facilitate this, each student is required to spend one semester or multiple shorter stays in career advancement programs. Most any opportunity for enrichment can be considered for credit. These are either arranged by faculty members, the Department, or initiated by the student. They are an important part of the student’s training and often open avenues for future employment. If a student already has industrial research experience, this requirement may be waived if the student desires.

The traditional (required and elective) coursework includes analytical, biochemistry, inorganic, organic, and physical chemistry courses. Instead of taking comprehensive or cumulative examinations, our students are required by the middle of their second year, to write and orally defend a proposal based on their Ph.D. research project. The final degree requirement, upon completion of their research, is the writing and oral defense of the dissertation.

**M.S. in Chemistry**

There are three types of masters degrees offered. The Master’s Degree with Thesis is a research degree and is generally obtained in two or three years of full-time work. During this time, the student learns to recognize and solve problems in research. Graduate work in chemistry leading to this degree requires 24 hours of coursework and completion of a thesis based on the research performed by the student.

The M.S. Degree with Thesis Substitute is designed for students who are currently employed in industry. This thesis substitute option requires 27 hours of course work and 6 hours of an individual instruction course. The final requirement is a substantial report (the thesis substitute) rather than a thesis. In order to exercise this option, the student must have completed at least five years of
suitable professional experience in an industrial, government or other chemistry laboratory at the time that the degree is awarded.

A non-thesis route to the M.S., requiring 36 credit hours of course work, is also available.

**Interdisciplinary M.S. and Ph.D. Programs**

The Department of Chemistry and Biochemistry participates in several interdisciplinary programs which include special chemistry tracks leading to the Ph.D.

**Materials Science and Engineering Ph.D.**

The University of Texas at Arlington offers a very strong graduate program in Materials Science and Engineering ([www.uta.edu/mse](http://www.uta.edu/mse)) leading to Master's and Ph.D. degrees. The present program fully accesses all of the Materials Science capabilities on campus, including those of related research centers that have gained national and international recognition.

Our program allows students who complete the core Materials Science and Engineering requirements to carry out independent research and to develop a professional level background in a number of scientific and engineering disciplines. The core courses provide the underlying scientific fundamentals upon which the discipline of materials science is based. These courses are augmented by elective offerings from the departments of Physics, Chemistry, Mathematics, as well as Electrical, Mechanical, Biomedical, and Aerospace Engineering. Students gain expertise in scientific research by designing original research projects, carrying out experiments to completion, explaining their results, and publishing their findings.
The interdisciplinary nature of the curriculum and research efforts are structured to give our students a broad-based education in a variety of fields including physical and mechanical metallurgy, materials characterization, electronic materials (including conductors and superconductors), ceramics, biomaterials, polymers (electrically conductive and conventional), polymeric-matrix composites and metal-matrix composites, as well as advanced materials. The University of Texas at Arlington holds tremendous potential for our graduates and has excellent relationships with local industries such as Texas Instruments, Loral, Bell Helicopter, Textron, National Semiconductor, Surgikos, ITW, and Lockheed Fort Worth.

Environmental and Earth Sciences M.S. and Ph.D.

Interest in the environment is an ever-widening field. A cross-disciplinary graduate program leads to M.S. and Ph.D. degrees specializing in understanding and resolving complex environmental problems. The Department of Chemistry & Biochemistry joins the Departments of Biology, Civil Engineering, Geology and the School of Urban and Public Affairs in an integrated multi-disciplinary approach to develop the diverse background needed for resolving environmental problems. The program offers to students who have earned science or engineering undergraduate degrees a common ground for interdisciplinary communication and competence. For additional information contact Professor Andrew Hunt (hunt@uta.edu).
Financial Support

Teaching and research assistantships and research fellowships are available to qualified students. Most students in their first and second years serve as teaching assistants. This requires about 12 hours per week of student contact in addition to some grading and lab preparation needs. Some well-qualified applicants may be offered special fellowships or research assistantships the first year depending on availability and qualifications of the student. Beyond the first one or two years, students are usually supported either as research assistants, research fellows, or as teaching assistants; and are expected to devote their time outside of class to their dissertation or thesis research project. Fellowships from several sources and assistantships valued at $2,000 per month, including fringe benefits and an excellent insurance package are available. Assistantship support is maintained, or in some cases increased, on a yearly basis, assuming that all degree candidacy requirements are met by the student. All doctoral level students meeting entrance requirements are provided a College of Science STEM tuition fellowship, which covers 85% of the cost of tuition. During the course of schooling, additional fellowships of up to $2000 per year may be garnered by graduate students who exhibit special promise and achievements. Besides the teaching and research assistantships, department scholarships also are available to qualified students for the first year. Additionally, during the time spent in career development and internship opportunities, the stipend received by the student is usually significantly greater than that for a teaching or research assistantship. Importantly, because the career advancement opportunities are required by the degree, international students limited by various visa requirements are still eligible to be supported by and participate in these opportunities.

Summer Support

The Department provides support for students in good standing through the summer months. Monthly stipends are essentially the same as academic year appointments. This allows students to make valuable progress toward their degree during the summer.
Fellowships, Scholarships, and Assistantships, 2014 - 2015

Frequently Asked Questions about applying to the program:
http://www.uta.edu/chemistry/graduate/how-to-apply.php

**Graduate Teaching Assistantship**
Teaching and research assistantships and research fellowships are available to all qualified PhD-bound students. Most students in their first and second years serve as teaching assistants. Some well-qualified applicants may be offered special fellowships or research assistantships already in or after the first year. Fellowships are available from several sources, and assistantships are $18,000 per academic year (9 months) plus fringe benefits, including an excellent insurance package. All doctoral level students in good academic standing are eligible for tuition support, covering 85% of the tuition (amounting to approximately $6,000 per year). The Department provides the opportunity for summer support for students in good academic standing. Monthly stipends are comparable to those during the academic year appointments.

**Additional Fellowships and Scholarships**
A variety of fellowships and scholarships are available for application or nomination to provide extra support funds to graduate students. Many are approximately $1000 - $2000 annually. Some are slated to support first year students and are awarded prior to beginning the program. Others are awarded to continuing students based on exceptional merit.

More information on available fellowships can be found here:
http://www.uta.edu/chemistry/graduate/stipends-and-fellowships.php
The Department is located in Science Hall (SH), the Baker Chemistry Research Building (CRB) and the new Chemistry and Physics Building (CPB). We are well equipped to perform top-level research in all traditional and interdisciplinary chemistry-based fields. The major equipment available includes:

- Two multinuclear, superconducting (300 and 500 MHz) FT-NMR spectrometers with both solids and liquids capability;
- Three single crystal X-ray diffractometers with low-temperature capabilities;
- Analytical and preparative HPLC instruments;
- Capillary electrophoresis (CE) instruments;
- UV/Vis, fluorescence, chiral, and MS detectors for CE and HPLC;
- API (ESI/APCI) mass spectrometer detectors (single quad, QqQ, QIT, LIT, IT-TOF);
- Numerous gas chromatographs;
- GC/FT-IR spectrometer;
- Two GC-MS/MS instruments;
- GPC instrument with multiangle laser light scattering detector;
- Three fast protein LCs;
- Gel electrophoresis instrument;
- Gel documentation system;
- HPLC-ICP-MS;
- MALDI-TOF-MS;
- Several FT-IR spectrometers;
- Electron spin resonance spectrometer;
- Numerous UV/vis spectrophotometers (some with diode-array detection);
- UV/vis/NIR spectrophotometer;
- Two spectrofluorimeters;
- Circular dichroism spectrometer;
- Mössbauer spectrometer;
- Dynamic light scattering instrument;
- Rapid scan time-resolved spectrometer;
- Fluorescence microscope;
- Phosphor imager;
- DNA fluorimeter;
- Flame and graphite furnace atomic absorption instrument;
- X-Ray Photoelectron Spectrometer;
- Microwave synthesizer instrument;
- High pressure apparatus;
- Electrochemical analyzer;
- Karl Fischer titrator;
- Viscometer;
- Residual gas analyzer;
- Patch-clamp apparatus;
- C,H,N elemental analyzer;
- Two ESCA systems;
• Several potentiostat / galvanostats;
• Optical microscope;
• Ultracentrifuge;
• Two high speed centrifuges;
• Several standard centrifuges;
• Differential scanning calorimeter;
• Thermogravimetric analyzer;
• Several vacuum atmospheres dry boxes;
• Liquid helium cryostat for conductivity;
• AC impedance analyzer;
• Two digital oscilloscopes;
• Surface tensiometer;
• Multiple HV pulse generators;
• Several vapor pressure osmometers;
• Transient electric birefringence apparatus;
• Laser-induced Kerr effect apparatus;
• Several fast reaction instruments (T-jump, laser-E-jump, P-jump, flash photolysis and stopped-flow apparatus);

• Thin film profilometer;
• Ellipsometer;
• Several RF plasma reactors;
• Quartz crystal microbalance;
• DNA sequencing apparatus;
• Centrifugal vacuum concentrator;
• Two UV transilluminators;
• Several incubator/shakers;
• Two liquid scintillation counters.

In addition to select instruments from the above list, the Biochemistry facility in CPB also has:

• Tissue culture facility with temperature controlled CO₂ incubator and biosafety cabinet;
• Cell and tissue storage liquid nitrogen tank;
• PCR machine;
• Multiple water purification systems;
• Scintillation counter;
• Cold rooms and warm rooms;
• -80 °C freezer.
For computational chemists, there is a 12-seat PC-based molecular modeling lab (PCs running Windows, Gaussian 03, GausView, and Hyperchem). Additionally, there are several Linux workstations and two high resolution graphics workstations.

The U.T. Arlington Computation Center consists of several high performance nodes with a total of 146 processors, between 1 – 16 GB of memory each, and over 8.4 Terabytes of total disk space. This cluster is dedicated to computational research. There are also hundreds of PCs and Macintoshes, many available 24 hr/day, for student and faculty use.

The Department of Chemistry and Biochemistry contains several dozen PC’s and Macintosh computers connected to the University’s servers, and to the internet. Within the Department, there is a well-equipped machine shop, two electronics shops, and a well-equipped stockroom; all maintained and run by our dedicated staff members.

The University Library has over 1.1 million volumes, 87,500 of which are in the Science and Engineering Library; both of which are in close proximity to the Department.
## Research Program Sponsors

### Agencies and Foundations
- The State of Texas
  - Advanced Research Program
  - Advanced Technology Program
  - Research Enhancement Program
  - U.T. Arlington – U.T. Dallas Collaborative Seed Program
  - U.T. Arlington – UNTHSC Collaborative Seed Program
  - U.T. Arlington – UTSW Collaborative Seed Program
  - Texas Commission for Environmental Quality
  - Texas Parks and Wildlife Department

### Companies
- Thermo / Dionex Corporation
- Cray Research, Inc.
- DuPont Agrochemicals
- Pfizer
- Advanced Separation Technologies, Inc. (ASTEC)
- Alcon Research Laboratories
- Electronic Bio Sciences
- Sid Richardson Carbon and Energy Company
- DuPont Central Research Labs
The disciplines of scientific research in the Department are broken down into traditional avenues, including Analytical, Inorganic, Organic, Physical, Polymer Chemistry, and Biochemistry research. Within these disciplines, some specific foci include the following:

- Artificial Photosynthesis
- Asymmetric Synthesis
- Atmospheric Chemistry
- Automated Intelligent Analyzers
- Bioinorganic Chemistry
- Biochemical Kinetics
- Biochemical Redox Regulation
- Biosensor development
- Biosynthesis
- Carcinogenesis
- Cell-Signaling Mechanisms
- Colloid Chemistry
- Computational Chemistry
- Drug and Radiation Resistance
- Drug Discovery
- Electrodeposition
- Enantiomeric Separations
- Environmental Chemistry
- Enzymology
- Eukaryotic Transcription
- Fast Reaction Processes
- Gene Expression and Regulation
- Heterocyclic Chemistry
- Heterogeneous Photocatalysis
- Homogeneous Catalysis
- In-situ Medical Diagnosis
- Instrumentation Development
- Intervention of Anti-Cancer Drugs
- Ion Transport Mechanisms
- Ionic Analysis and Separations

Current Research Areas
Ionic Liquids
Luminescent Materials
Mass Spectrometry
Materials Chemistry
Medicinal Chemistry
Microbe Separations
Molecular Recognition
Nanochemistry
Natural Products Isolation
Natural Products Total Synthesis
Nonlinear Phenomena
Plasma Polymerization
Process Analyzers for Industry
Proteomics
Quantum Chemistry
Semiconductor/Electrolyte Interfaces
Separation Science
Solar Energy Conversion
Supramolecular chemistry
Surface Chemistry
Synthetic Methods Development
Thin Film Flow Devices and Sensors
Thin Film Formation
Transition-Metal Chemistry
Water Quality

A high degree of collaboration and collegiality exists in the Department among faculty, students, and research fellows. Many faculty members also have active collaborations with other departments in the University. There is truly something for everyone here at U.T. Arlington! Furthermore, all faculty members are happy to entertain new ideas as exciting avenues of research.

Application and Admission to Graduate Study

A complete application form, official transcripts of all undergraduate and prior graduate grades, the Graduate Record Examination (GRE), and three letters of recommendation are required of all entering students. All the above should be sent directly to the Graduate School except the three letters of recommendation which should be sent to the Graduate Advisor in the Chemistry and Biochemistry Department. Applicants from foreign countries must also submit their TOEFL score and a financial statement. They also must be prepared to demonstrate competency in spoke English.

The deadline for applicants for admission to the Graduate School is several months before the semester begins and is listed in the current Graduate School Catalog. If financial aid is requested, application should be made much earlier.
Each student who is interested in our graduate program is requested to fill out a preliminary inquiry form at http://www.uta.edu/chemistry/graduate/pre-application-form.php. There is no cost to submit this form and the information provided will help us better assist each interested student through the official application process. Furthermore, a list of frequently asked questions related to applying to the graduate program is available at http://www.uta.edu/chemistry/graduate/how-to-apply.php.

For further information, write to: The University of Texas at Arlington
Graduate Advisor, Department of Chemistry and Biochemistry
Box 19065
Arlington, Texas 76019-0065, USA

Or visit our web site at: http://www.uta.edu/chemistry/
Or contact us by: Phone: (817)272-3171; FAX: (817)272-3808; E-mail: chemgrad@uta.edu

Chemistry Graduate Students Association

The Chemistry Graduate Students Association (CGSA) was founded in 1994 to provide a formal means of communication between chemistry graduate students and the faculty and administration. During the last three years, the CGSA has accomplished several goals. These include tasks from meeting with senior administration to discuss graduate student concerns, to social functions such as planning and organizing semi-annual departmental picnics.

Additionally, the CGSA performs many service projects for the department. Past projects include construction of the departmental recruiting booth and representing the department at regional and national meetings. During the grand opening of the new W. A. Baker Chemistry Research Building in March 1996, the CGSA led tours of the facility.

Many opportunities have presented themselves to our members. Recently, CGSA members participated with
faculty in interviewing candidates for new faculty position openings. Through these and other activities, the CGSA has provided a valuable resource for the department and has enhanced the professional development of our members.
Faculty and Their Research Interests
## Faculty Contact Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
<th>Email</th>
<th>Office</th>
<th>Administrative and Advising Duties</th>
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<tbody>
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</tbody>
</table>

CPB = Chemistry & Physics Building; CRB = Chemistry Research Building; SH = Science Hall; COS – College of Science
Daniel W. Armstrong  
Robert A. Welch Professor

B.S. 1972, Interdepartmental Science and Math  
Washington & Lee University, Lexington, VA

M.S. 1974, Oceanography,  
Texas A&M University, College Station, TX

Ph.D. 1977, Bio-organic Chemistry,  
Texas A&M University, College Station, TX


Research

• Molecular and Chiral Recognition
• Separation Science
• Colloid Chemistry
• Ionic Liquids
• Microbe Separations
• Mass Spectrometry

Selected Publications

Research

Research in our group focuses on catalytic reaction development with applications in natural product synthesis. Areas of fundamental interest include: the identification of new reactivity patterns, the evolution of related catalytic processes, and the development of new synthetic strategies. Specifically, we are pursuing new chemistry using azides, nucleophilic and electrophilic catalysis via *N*-heterocyclic carbenes, synergistic catalysis, redox economy, and metal-catalyzed tandem processes.

Selected Publications


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**Alejandro Bugarin**

Assistant Professor

**B.S. Chemistry, Pharmacy and Biology (2003)**
Universidad Autónoma de Zacatecas, Mexico

**M.S. Chemistry (2006)**
University of Texas at El Paso, TX

**Ph.D. Chemistry (2011)**
Texas A&M University, TX

**Post-Doctoral Research (2012)**
University of California, Santa Barbara, CA

**Member:**
American Chemical Society
SACNAS
Saiful M. Chowdhury
Assistant Professor

Ph.D. Chemistry (2001-2006)
Washington State University, Pullman, WA

Post-Doctoral Research (2006-2009)
Pacific Northwest National Laboratory, Richland, WA

Research Fellow (2009-2012)
NIEHS, National Institute of Health (NIH)

Awards:
Fellow Award For Research Excellence (FARE), 2011, National Institute of Health
Laboratory Directed R & D Grant Award, 2009, PNNL

Current Grant:
AREA, NIGMS, NIH
UT Systems

Proteomics and Bio-analytical Mass Spectrometry Research

Mass Spectrometry Based Proteomics

- Quantitative Proteomics, environmental toxicants, drugs, - immune cells
- Method developments, large-scale PTMs profiling's, e.g. proteolytic cleavage, lipid modifications etc.
- Chemical cross-linking and mass spectrometry,- immune signaling, environmental diseases

Selected Publications

- Bhawal, Ruchika P., Conchadi Sadananda, S., Bugarin, A., Laposa, B., Chowdhury, Saiful M. - 'Mass spectrometry cleavable strategy for identification and differentiation of prenylated peptides.' – *Analytical chemistry*, 2015

Research

- Extraterrestrial Platforms: An Ion Chromatograph for the next Mars Rover
- Nonlinear spectrometry: Cavity Enhanced systems for high sensitivity high dynamic range measurements; Applications in Deep UV TOC measurements
- Miniature detectors for chromatography and other applications: An ultrasensitive noncontact conductance detector for measurement down to sub-μm capillaries
- Imaging Separations in real time, it’s a movie!
- A miniature arsenic detector for portable applications

Dal Nogare Award Lecture:
http://www.youtube.com/watch?v=UGE3Kgi1cyQ

Selected Publications


Separation of 5 common anions in 2 min – continuous repeat runs demonstrating reproducibility. 58 cm PMMA capillary, 19.5 μm id, 14 psi (1 atm), 131 pL inj, 100 μM ea fluoride, chloride nitrite, bromide, nitrate. This open tubular column can be dried, frozen, thawed, rewetted, and reused without loss of performance.
Ronald L. Elsenbaumer
Professor and Provost and Vice President for Academic Affairs

B.S. with Honors in Chemistry (1973)
Purdue University, West Lafayette, IN

Ph.D. in Chemistry (1978)
Stanford University, Palo Alto, CA

Prior Career:
ALLIEDSIGNAL, INC.
(AALLIED CHEMICAL / HONEYWELL) Morristown, NJ – 14 years

Awards:
National Academy of Inventors (2013)
ACS Student Award in Analytical Chemistry (1972)
Phi Beta Kappa (1973)

Member: American Chemical Society

Research

- Electrically Conducive Polymers
- Advanced Lubricants and Lubricant technology
- Mechanistic Organic and Polymer Chemistry
- Materials Science of Conjugated Polymers
- Corrosion
- Organic Superconductors

Selected Publications


Research

- Homogeneous Catalysis
- Luminescent Materials
- Isolable Reaction Intermediates
- Greener Oxidation Chemistry
- Nanomaterials
- Disinfection Science

Selected Publications


Frank W. Foss Jr.
Associate Professor

B.S. 1999, Chemistry, University of Richmond
Ph.D. 2006, Chemistry, University of Virginia, Prof. T. Macdonald
Post-Doctoral Research 2006-8
Chemistry, Columbia University, NYC, NY Prof. R. Breslow
Awards: President’s University Teaching Award for Non-Tenured Faculty, 2014
Member: ACS
Funding: NSF, UTA
www.uta.edu/faculty/ffoss
ffoss@uta.edu
817.272.5245

Research

Organic, Bioorganic, and Medicinal Chemistry
- Biomimetic Organocatalysis
- Aerobic Oxidations
- Dual Catalysis
- Structure Function Relationships
- Medicinal Chemistry
- Material Design and Preparation

Selected Publications

Shuai Chen, Mohammad S. Hossain, Frank W. Foss Jr.* "One-Pot Multi-Component Organocatalytic Syntheses of Pyridines and Benzothiazoles: Aromatic Oxidation by Bioinspired Aerobic Organocatalysis” ACS Sustainable Chemistry and Engineering, 2013, 1, 1045-1051 (DOI: 10.1021/sc4001109)

Andra Carter, Bishnu Subedi, Amanda M. Dark, Frank W. Foss Jr.,* Brad S. Pierce* "Development of nucleoside substrate surrogates for the characterization of the O2-dependent tRNA modifying MiaE by peroxide-shunt catalysis.” Biochemistry, 2013, 52, 6182-6196 (DOI: 10.1021/bi4000832)


Research

- Mechanistic Studies of Redox Regulation of redox-active Small GTPases, Phosphatases and Kinases
- Intervention of Anti-cancer Drugs

Selected Publications


"Kinetic mechanisms of mutation-dependent Harvey Ras activation and their relevance for the development of Costello syndrome" Michael Wey, Jungwoon Lee, Soon Seog Jeong, Jungho Kim, and Jongyun Heo, Biochemistry, (2013) 52: 8465-8479.

"Insight into the 6-thiopurine-mediated Termination of the Invasive Motility of Tumor Cells Derived From Inflammatory Breast Cancer" Jongyun Heo, Michael Wey, and Inpyo Hong, Biochemistry, (2011) 50: 5731-5742


B.Sc. 1987, Biological Science and Chemistry, Sogang University, Seoul Korea
M.Sc. 1997, Biological Science, Northern Illinois University
Ph.D. 2001, Biochemistry, University of Wisconsin – Madison
Post-Doctoral Fellow, 2001-2006, University of North Carolina – Chapel Hill Department of Biochemistry and Biophysics
Member: American Chemical Society, New York Academy of Sciences, Academic Keys.
Junha Jeon
Assistant Professor

B.S. 2000, Chemistry
Sungkyunkwan University, Korea
M.S. 2002, Chemistry
Sungkyunkwan University, Korea
Prof. Chan-Mo Yu, Advisor
Ph.D. 2009, Chemistry
University of Minnesota
Prof. Thomas R. Hoye, Advisor
Post-Doctoral Research (2009-2011)
University of Pennsylvania
Prof. Amos B. Smith, III, Advisor

Awards:
2003 KOSEF Pre-Doctoral Graduate Research Fellowship
2004, 2005 University of Minnesota, Robert L. Ferm Outstanding Graduate TA Award
2014 Recipient of ACS PRF-DNI

Research

I. Development of Transition Metal-Catalyzed New Synthetic Methods
- Catalytic Silylative Functionalization of Alkenes and Alkynes
- Catalytic C–H Bond Functionalization
- Catalytic C–C Bond Functionalization

II. Bioactive Natural Product Total Synthesis
- An Asymmetric Synthesis of Marine Natural Products

Selected Publications


Kayunta Johnson-Winters
Assistant Professor

B.A. 1999, Biology/Chemistry, Alverno College
Ph.D. 2006, Biochemistry, University of Wisconsin-Milwaukee
Project: Structural and Kinetic Characterization of 4-Hydroxyphenylpyruvate Dioxygenase from Streptomyces avermitilis.
Prof. Graham R. Moran

Post-Doctoral Research 2006-2010
University of Arizona
Project: Kinetics and Spectroscopy of Sulfite Oxidase and Related Molybdenum Enzymes
Regents Professor, John H. Enemark

Member: American Chemical Society

Awards: 2011 National Science Foundation (NSF) RIG_BP, 2010 UTA Research Initiation Program (REP), 2007 National Institutes of Health (NIH) Ruth L. Kirschstein National Research Service Award

Research

- Enzymes that use Cofactor F₄₂₀
- Structure determination by spectroscopic techniques and X-ray crystallography
- Enzyme kinetics and mechanism by rapid-mixing pre-steady state and steady state methods.
- Investigation of reaction intermediates by kinetic isotope effects.

Selected Publications


Visible spectra of the reduced and oxidized cofactor F₄₂₀. From: J. Bacteriol. (Cheeseman et. al)
Research

- computational materials chemistry of extended systems
- synthesis and functionalization of quantum dots and hybrid particles
- amorphous ceramics, inorganic networks and glasses
- high-pressure chemistry and structural phase transformations
- nanostructured materials and interfaces

Selected Publications


**Peter Kroll**

Associate Professor

Graduate Advisor

**Diplom 1993**, Physics, Ruprecht-Karls University Heidelberg

**Ph.D. 1996**, Materials Science, Technical University Darmstadt

**Post-Doctoral Research 1997-1999**

Cornell University

**Habilitation 2005**, Chemistry

RWTH Aachen University

**Current (2014) support** from:

NSF, DARPA, AFOSR

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**Diagram:**

- **Structure:** Ta$_3$N$_5$ and TaN
- **Reaction:** $\text{TaN} + \text{N}_2 \rightarrow \text{Ta}_3\text{N}_5$
- **Conditions:** $\sim 9 \text{ GPa}$

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**Graph:**

- **Axes:** Pressure $\rightarrow$ Temperature

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“Current (2014) support from:

NSF, DARPA, AFOSR”
Research

Our group’s research is firmly rooted in synthetic chemistry, specifically in the development and application of new synthetic methods to the total synthesis of bioactive natural products. Inventing enabling synthetic methods are a hallmark of our research. In recent years, our efforts have focused on heterocyclic chemistry and in particular to the construction of imidazole-containing natural products, including members of the oroidin and Leucetta families of marine alkaloids. The structures depicted below are representative of the types of molecules that we target.

Selected Publications

Robin Macaluso  
Associate Professor

B.S. Louisiana State University, Education  
Ph.D. Louisiana State University, Chemistry

Research

- Crystal growth of intermetallics
- Synthesis of novel oxynitrides
- Neutron and X-ray scattering

Selected Publications


Research

- Synthesis of metal-polypyridyl complexes for applications on catalysis and cancer biology.
- Photocatalysis for CO₂ reduction to useful fuels
- Development of hypoxia selective anti-tumor drugs based on redox-active ligands
- Mechanistic studies of proton-coupled electron transfer reactions

Selected Publications


Subhrangsu S. Mandal
Associate Professor

B.Sc. 1989, Chemistry, Midnapore College, India
M.Sc. 1992, Chemistry, Kalyani University, India
Ph.D. 1998, Chemistry, Indian Institute of Science, India
Post-Doctoral Fellow, 1998-1999, University of Alberta, Canada
Post-Doctoral Fellow, 2000-2005, Howard Hughes Medical Institute, UMDNJ, New Jersey, USA.

Member: American Chemical Society, American Society of Biochemistry and Molecular Biology, New York Academy of Sciences, Estrogen-research focus group

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Research

- **Histone modification and Epigenetics:** Gene regulation, Chromatin biology
- **Endocrinology:** MLL histone methyl-transferases in steroid hormone signaling, cholesterol metabolism, endocrine disruption, neuroprotection, and cancer
- **Drug discovery:** Antisense based gene targeting, Anti-tumor activities of small molecules and metal-complexes for novel therapy (cell lines and mice model)

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Selected Publications


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Histone Methylation

[Diagram showing histone methylation]
Research

• Bioinorganic and Biophysical Chemistry
• Mechanistic enzymology of sulfur-oxidation
• tRNA-modifying metalloenzymes
• Electron Paramagnetic Resonance (EPR)/Inorganic Spectroscopy

Selected Publications

Bishnu P. Subedi, Andra L. Corder, Siai Zhang, Frank W. Foss, Jr., and Brad S. Pierce; “Steady-state kinetics and spectroscopic characterization of enzyme-tRNA interactions for the non-heme diiron tRNA-monooxygenase, MiaE” Biochemistry 2015 54(2):363-76.


Research

- Semiconductor/electrolyte interfaces and solar energy conversion
- Heterogeneous photocatalysis and water/air purification
- Electrodeposition of semiconductor and nanocomposite thin films
- Materials and environmental chemistry

Selected Publications


Jennifer Rhinehart
Lecturer

B.S. 2006, Chemistry, Mathematics
Whitworth University

M.S. 2008, Chemistry,
University of Rochester

Ph.D. 2011, Chemistry,
University of Rochester

Activities

• Chemical Education
• Teaches Biochemistry I
• Teaches General Chemistry

Awards and Honors
Activities

- Coordinator for General Chemistry
- Director of UT-Arlington’s Chemistry Clinic

Awards and Honors

- Regents’ Outstanding Teaching Award, University of Texas System (2009).
- Favorite Professor Award, Pre-Dental Student Association (2005).
- Honorary Member of the Golden Key National Honor Society (2001).
- Outstanding Academic Advisor, Faculty Award (1997-1998).
- Outstanding Contribution to Student Retention, Vice Provost for Academic Affairs (1998).
- Most Helpful Faculty Award, UTA Chemistry and Biochemistry Society (1998).
- Outstanding Technical Achievement Award, ARCO (1997).

B.S. 1979, Chemistry, Oklahoma Christian University
D.Sc. 1992, Chemistry, University of Texas at Arlington

Member: American Chemical Society, UT-Arlington’s Advising Association
Research

Research in our group crosses a broad spectrum of topics, encompassing the use of modern chromatographic separation techniques and molecular mass spectrometry to solve challenging analytical problems in the realm of pharmaceutical, environmental, clinical, and physical chemistry. Our efforts are generally evenly split over fundamental (chromatographic separations; electrospray ionization; flow injection analysis) and applied (trace quantitative analysis; preparation of complex matrices; natural product drug discovery) research topics. For more details about our research, please visit my website: http://www.uta.edu/chemistry/faculty/directory/kevin-a-schug.php

Selected Publications


Kevin A. Schug
Associate Professor & Shimadzu Distinguished Professor of Analytical Chemistry

B.S. 1998, Chemistry, College of William and Mary
Ph.D. 2002, Chemistry, Virginia Tech
Prof. Harold M. McNair, Advisor

Post-Doctoral Research 2003-2005 Institute for Analytical Chemistry, University of Vienna, Austria
Prof. Wolfgang Lindner, Advisor

Associate Editor: *Journal of Separation Science* (Wiley)

Seiichiro Tanizaki
Assistant Professor
Of Practice

B.A. 1993, Mathematics/Chemistry, University of Maine at Farmington
Ph.D. 2003, Chemistry, Brandeis University

Activities

• Chemical Education

• Teaches introductory chemistry courses targeted for science majors, non-science majors, and nursing-intended students.

• Onsite Director, Welch Summer Scholar Program.

• Chair, Departmental Undergraduate Curriculum Committee.

Awards and Honors

• Nominated for the President's Award for Excellence in Distance Education Teaching, 2014.

• The UT System Regents’ Outstanding Teaching Awards, August 2013.

• The Provost’s Award for Excellence in Teaching (2012)

• Honored by Freshman Leaders on Campus (FLOC) at the University of Texas at Arlington. May, 2012/May, 2011/May, 2010/April, 2007.

• Nominated for the 2009 – 2010 Outstanding Academic Advisor Award.
The University of Texas at Arlington
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