



American Chemical Society

Eastern North Carolina Section News

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April 2007

2007 ACS LOCAL SECTION OFFICERS

The current Eastern North Carolina ACS section officers are shown below.

| Officer | Names |
|---------------------|--------------------------|
| Chair | Robert Hammond |
| Chair-Elect | Nominations still needed |
| Secretary | Jennifer Civelli |
| Treasurer | Jeff Rorer |
| Councilor | Sut Ahuja |
| Alternate Councilor | Andrew Morehead |

Dr. Robert Hammond (hammond@mail.ecu.edu) is currently a Visiting Assistant Professor of Chemistry at East Carolina University. Dr. Hammond is a physical chemist by training and has been an ACS member since 1981.

Jennifer Civelli (jcivelli@cfcc.edu) is currently a Chemistry Instructor at Cape Fear Community College. Ms. Civelli is a graduate from Cal Poly, San Luis Obispo and San Diego State University. Jennifer has been an ACS member since 2003.

Mr. Jeff Rorer (rorerj@mail.ecu.edu) is an Instructor at Pitt County Community College and East Carolina University and is a BS and MS graduate of East Carolina University. Mr. Rorer has been an ACS member since 1997.

Dr. Sut Ahuja (sutahuja@xaranda.net) is President of Ahuja Consulting for pharmaceutical and chemical industry. He specializes in separation chemistry and ultratrace analysis. Dr Ahuja has been an ACS member since 1964.

Dr. Andrew Morehead (moreheada@mail.ecu.edu) is an Assistant Professor of Chemistry at East Carolina University. Dr. Morehead is an organometallic chemist and has been an ACS member since 1990.

We are still in need of a 2006 chair elect. If you are interested in the position please contact any of the officers.

2007 CHAIR'S MESSAGE

Greetings from the 2007 Chair of our section,

Thank you for permitting me to serve as chair for a second term. I have high hopes, however, of being able to retire from the chair at the end of this year. For this to be possible we will need a chair-elect. I know that many of you have indicated that you are not able to serve as chair-elect at this time, but I would

encourage all of the members of the section to think about the possibility of serving as chair-elect for the section, and of becoming more involved in the section in other ways.

The section has begun the year with a number of activities. We have already had three meetings with speakers and have tried out a new meeting location at Pitt Community college. We also have another meeting scheduled on April 12 in Wilmington with two local speakers. Please try to attend if you are able. We have also had a very successful Chemathon on March 22. We had 86 attending from the area high schools and the competition among the teams was exciting. The top three quiz bowl teams were from Clayton High School, Ashley High School, and South Central High School. Jacob Ward from Ashley High School had the best individual score. The poster competition was won by Jacksonville High School and the crystal growing competition was won by South Central High School. All the students attending seemed to enjoy the event. Out of those attending 10 will be invited to participate in the national test for the U.S. Chemistry Olympiad. My special thanks go out to all those who assisted in this important event.

During this term in office I plan to continue all the activities in which our section has been participating and would like to see an increase in the activities carried out by the section. I hope to have increased outreach activities to our communities and secondary school students. In particular, there are two major activities that the national ACS is using to promote outreach to our communities each year, Chemists for Earthday in the spring, and National Chemistry Week in the fall. To have increased activity requires member participation. So, if any of our members are interested in assisting in these events, or in any other events, please let me know. There are a number of other program areas that the national ACS office is encouraging including Silver Circle, Young Chemists, Women Chemists, etc. These program ideas can be viewed at the website <http://www.chemistry.org/portal/a/c/s/1/acdisplay.html?DOC=localsections\index.html>. Please consider if you might be interested in helping promote some of these programs within our local section.

I am sure you have heard the phrase, "two heads are better than one". All of you together certainly are more than "two heads" and together you certainly are better than my "one head", so I would encourage you to think of ideas for our section and send me those ideas. What things should be changed, what things should be left unchanged, what new programs and activities should be started?

In closing, I want to thank you all for your support and continued participation in our section. Looking forward to a great year together.

Robert Hammond, Chair

My contact information is: Robert M. Hammond, Ph. D., Department of Chemistry, 300 Science and Technology Building, East Carolina University, Greenville, NC 27858, (252) 328-9728, hammond@ecu.edu



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Introduction to ChemInsight™

In response to the growing demand for scientific experts in the legal, accounting and consulting fields, ACS is launching ChemInsight™ – a scientific experts matching service – at the Chicago National Meeting. Legal professionals often find themselves involved in litigation with scientific topics which a lay person would have difficulty understanding. They resolve this problem by hiring experts to assist in the understanding of scientific issues, make pre-trial preparations or provide testimony to persuade a jury during trial. In these roles, experts often play a critical role in determining the course and outcome of a case. Demand for experts is not limited to the legal domain. In the wake of the Sarbanes-Oxley Act of 2002, forensic accountants and consulting firms also seek experts to provide insights into the sciences, technologies, processes, and other areas with strong scientific content. As chemical and allied sciences increasingly find their way into commercially successful products and services, the demand for scientific experts to help legal and other professionals is bound to increase.

Initially, ChemInsight™ plans to offer two services: Directory Listing Service, which would promote experts through a free search on ChemInsight.org and through a free print directory distributed to over 60,000 law, forensic accounting and consulting firms; Expert Matching Service, whereby ChemInsight™ would contract with law, accounting and consulting firms to conduct a customized search to identify the most relevant experts who best meet their needs.

By helping scientists in chemical and allied sciences gain access to opportunities beyond their core disciplines, ChemInsight™ would enable them to earn additional income and solve challenging problems in a new context, thereby enhancing their visibility beyond the scientific community. This would also help legal, consulting, and accounting firms solve the ever increasing number of cases and problems involving complex scientific topics.

If you have expertise in a relevant science area, ACS invites you to list with ChemInsight™. Listing with ChemInsight™ offers several advantages over other expert services in the market, such as:

Exclusive focus on chemical and allied sciences – there is no other service that caters exclusively to these sciences

Offered by the American Chemical Society – the world's largest scientific organization

Lowest listing fees among comparable services

Attractive member discounts on top of the already low listing fees

Active promotion through the web and print media, including:

Custom-designed www.cheminsight.org website providing comprehensive search, registration and profile editing capabilities

Direct access to 60,000 legal, accounting, and consulting professionals through the free distribution of the National Directory of Scientific Experts

Multiple ACS websites that generate over 110 million visitors annually

Journals and magazines relating to intellectual property and several other relevant areas of law

Premier legal websites and legal symposia/conferences

Direct contacts and promotions to business consulting and forensic accounting firms with interest in the chemical enterprise

ChemInsight™ is a new initiative of the Office of New Business Development (NBD) of the Society. Thomas Smith serves as the Manager of ChemInsight™. For more information, please visit www.ChemInsight.org.

ACS Strategic Directions 2007 and Beyond!

The American Chemical Society has developed an exciting new Strategic Plan in support of the ACS Vision: "Improving people's lives through the transforming power of chemistry." The plan was recently released at www.chemistry.org/strategicplan and will shape the Society's strategic direction through 2007 and beyond. All ACS members were invited to contribute to the plan, and the final version reflects thousands of their comments and survey responses. The document has a built-in feedback mechanism where, through the Web, members can continue to make suggestions about the plan as it evolves from year to year. The Strategic Plan also features links to numerous ACS programs, so that readers can see part of how the Society plans to accomplish the plan's objectives.

There is a new external focus in this Strategic Plan that calls upon ACS members to use their science to "transform the world" for the benefit of Earth and its people. As in the past, the plan pledges to continue to provide information, programs, products, and services to give members the highest value for their involvement.

The plan sets out three areas for the Society and for its members to work towards:

Enabling Scientific Progress: To provide the highest quality education, knowledge, and tools to facilitate solutions for major scientific challenges safely and sustainably

Fostering Community: To strengthen the power of association by connecting people around the world in chemistry-related disciplines

Transforming the World: To focus on challenges and opportunities at the intersection of chemistry and society that improve the quality of human life
You are invited to visit www.chemistry.org/strategicplan to review the plan and to "join the discussion" regarding the overall plan and its themes. Together, through collaborative engagement, all members can continue to benefit from their involvement with ACS and improve people's lives through the transforming power of chemistry as well.

AHUJA ACADEMY OF WATER QUALITY

AHUJA DONATES TO UNCW TO CREATE ACADEMY OF RESEARCH ON WATER QUALITY

A partially filled glass of water demands the classic question: Is it half empty or half full? The question is not just a matter of philosophical debate for more than one billion people worldwide who consume unclean drinking water. For them, it can be a matter of life or death. Their water may be full of inorganic or organic substances containing arsenic to zinc, i.e., covering the whole alphabet. For example, arsenic, boron, chromium, dioxins, mercury, and PCBs are toxic in certain forms, even when present in low amounts.

How does arsenic from natural sources contaminate water in North Carolina wells and in that of many other countries of the world? What is the best way to remove arsenic from our drinking water? What type of mercury is most toxic to humans? Most importantly, how can scientific analysis of water contamination translate into useful, practical strategies to improve water quality?

These are the types of questions that inspire UNCW faculty and students to spend countless hours engaged in analytical research. Dr. Satinder "Sut" Ahuja, a scientist retired from Novartis Corp., a global leader in the pharmaceutical industry, shares UNCW scientists' passion for solving problems through scientific inquiry.

"Water is the most important resource we have besides air. About 1.2 billion people worldwide drink unclean water today," Ahuja said. "By 2025, a worldwide water shortage will affect approximately 3 billion people. These are big problems, but they can be solved. I decided if we could invigorate some research in this area, it would be very helpful. UNCW already has a number of scientists working in this field, and I decided to help them."

To support their water quality research, Sut and his wife Fay donated a Brunswick County villa to UNCW. The university sold the villa and used the proceeds to establish the Ahuja Academy for Water Quality within the Department of Chemistry and Biochemistry.

Ahuja, an active member of the American Chemical Society, operates a consulting firm from his Calabash, N.C., home. In December 2005, he led an

international workshop on arsenic contamination in groundwater in Bangladesh. That nation borders India, Ahuja's country of birth, and he has long championed efforts to improve the quality of life there.

The academy is setting up full-year Ahuja Graduate Fellowship for Water Quality Research to be awarded to a selected graduate student each year. This year's fellow will work on mercury contamination. In addition, a Web site will be set up on water quality that will highlight the research in this area. In time, it will provide a platform for UNCW to elevate its water quality research to a higher level, according to Dr. James H. "Jimmy" Reeves. "I want UNCW and the academy to be known nationally for cutting-edge water quality research."

In fact, UNCW already operates the only lab in North Carolina capable of handling in-depth analysis of methyl mercury, a neurotoxin that accumulates in shark, swordfish, king mackerel and tilefish, among other seafood consumed by humans. Mercury contamination in freshwater and saltwater species is a major concern for public health officials and the fishing industry.

For Dr. Robert J. "Bob" Kieber, chemistry professor, the Ahujas' gift "resonates on so many levels. It supports students to conduct research and it helps UNCW to impart research to state and national agencies that address water quality issues. We are accomplishing two goals: we are training future scientists and we are solving problems."

For Dr. Ahuja, the villa donation provided an effective means for generating funds to support his lifelong commitment to improving peoples' lives through scientific research.

"If you do something worthwhile, no matter how small, it benefits everyone in the long run," he said. "It will help people in North Carolina, the United States and, ultimately, the world."

UPCOMING MEETINGS

SUMMER WORKSHOPS FOR HIGH SCHOOL CHEMISTRY TEACHERS

The American Chemical Society is sponsoring teacher training workshops this summer throughout the country for high school chemistry teachers. Two types of workshops are available: **Chemistry in the Community**, and **Advanced High School Chemistry**, Teacher Training Workshops. In each workshop teachers are led by experienced secondary and/or college chemical educators who provide participants with information and tools for teaching inquiry-based learning.

Advanced High School Chemistry, Teacher Training Workshops, led by experienced secondary and college chemical educators, provide participants with tools for teaching an inquiry-based honors or

advanced high school chemistry course such as IB or AP. The activities used in these three-day workshops are from the ACS college text, *Chemistry* which emphasizes short experiments to introduce chemical concepts, and promote active and collaborative learning. All interested advanced high school chemistry teachers are encouraged to apply, regardless of current textbook.

Chemistry in the Community, Teacher Training Workshops are designed for teachers using or intending to use the ACS textbook *Chemistry in the Community*. In these five-day workshops, experienced ChemCom teacher leaders provide expert instruction and hands-on experience with many of ChemCom's activities and laboratory investigations.

There is a \$50.00 registration fee for each workshop, which includes all materials, meals and on-site housing. The dates and locations appear below.

June 24 California State University, Northridge, CA
July 8 Concordia University, Ann Arbor, MI
July 8 Greater Hartford Academy of Math and Science, Hartford, CT
July 15 University of St. Thomas, Houston, TX
August 5 St. Thomas University, St. Paul, MN

More information, application forms and/or online registration may be found at www.chemistry.org/education (follow the link for workshops and courses).

39TH MIDDLE ATLANTIC REGIONAL MEETING MAY 16 - 19

May 16 – 19 are the dates for MARM 2007 to be held at Ursinus College, Collegeville, Pennsylvania. Visit their website at www.marmacs.org to view both their technical and social programs and for information on where to stay.

MARM 2007 designed an exciting and innovative program with the professional interests of the regional members in mind. Topics include biological chemistry, chemistry of aging, sirtuin biochemistry, molecular magnetism, carbon nanotubes, glycoproteins, and a symposium dedicated to Alan G. MacDiarmid. The symposia begin officially on Wednesday morning, but a welcome reception is scheduled for Tuesday evening.

Also planned is a Cope Scholars Award symposium, along with a number of awards recognizing the contributions of chemists, industry, and educators in the region, a Women Chemists luncheon and half-day workshop on "Thriving in the Workplace" and ACS Career Management workshops.

39TH CENTRAL REGIONAL MEETING

**39th Central Regional Meeting (CERMACS)
Scheduled for May 21 – 23 in Covington, Kentucky**

The Cincinnati section is hosting CERMACS 2007, at the Northern Kentucky Convention Center. You can get details on the program by visiting the meeting website at <http://www.cermacs2007.org/>. If you have not reserved a room yet, you can do so at the website.

They promise a strong and innovative program. Topics include forensics as presented by William Dean, chief of forensic sciences, Hamilton County Coroner's Office; the "Fantastic Four Science Guys": Bassam Shkhashiri, David Katz, Al Hazari and John Fortman know how to make learning *fun*; the art of brewing, hosted by the Master Brewers Association of America; illuminating molecules; and chemical /biological sensors,.

62ND NORTHWEST REGIONAL MEETING (NORM), JUNE 17 – 20, BOISE, IDAHO

The Richland, Washington, local section is hosting NORM 2007 in Boise, Idaho,

The meeting will be held in conjunction with the annual meeting of the Pacific Division of the American Association for the Advancement of Science (2007 AAASPD). This offers an opportunity for a broad spectrum of topics by the scientific communities represented, with special emphasis on the chemical sciences.

Symposia include an Experimental Green Chemistry Lab, Thermodynamic Modeling, Effect of Contaminants on Fuel Cells, Agricultural and Public Health Protection, Radiopharmachemistry, Undergraduate Chemistry Demos, Semiconductor Materials, and Community College Options in Chemistry.

The meeting opens Sunday with a poster session and welcome mixer. NORM 2007 has scheduled lunch and a field trip to the Birds of Prey Center. Visit their website for more details and to make your room reservation:

http://northwestchemistry.org/Norm_2007.

Fall Regional Meetings

Advance registration and online abstract programs are open for fall regional meetings. Each has unique and topical programming planned. Visit their websites to submit a paper, register, or peruse their topics.

20th RMRM
Denver, CO
August 29 – September 1
www.uwyo.edu/rmr2007acs-aiche

41st WRM
San Diego, CA
October 10 – 13, 2007
<http://www.wrsmacs.org>

59th SERMACS
Greenville, SC

October 24 – 27
<http://www.sermacs2007.org/>

63rd SWRM
Lubbock, TX
November 4 - 7
<http://www.depts.ttu.edu/chemistry/SWRM07/>

42nd MWRM
Kansas City, MO
November 7 – 9
<http://membership.acs.org/m/mwrm2007/>

WOMEN CHEMISTS ...

SAVE THE DATE

August 22, 2007

4th Annual Women Chemists Committee and Northeastern Section Scramble Golf Tournament

(in conjunction with the 234th National ACS meeting
in Boston)

Brookline Golf Club at Putterham Meadows
All proceeds from this tournament
will support WCC and NESACS programs
For updated information, visit the NESACS
website at www.nesacs.org

2007 GREEN CHEMISTRY & ENGINEERING CONFERENCE
JUNE 26 – 29, 2007
WASHINGTON D.C.

Register now!

The 2007 Green Chemistry & Engineering Conference will take place June 26–29, 2007 in Washington, DC. The theme of this year's conference is *From Small Steps to Giant Leaps—Breakthrough Innovations for Sustainability*. Experts in green chemistry and green engineering will present breakthroughs that have advanced or will advance green chemistry and green engineering to significant new levels of innovation.

Breakthroughs Made

Some speakers will report on recent breakthroughs, giving conference attendees a chance to learn about the latest innovations for sustainability.

Breakthroughs Needed

Other speakers will identify innovations that must take place to advance sustainability significantly. These presentations will be calls to action, challenging all of the participants to focus on achieving these breakthroughs.

To learn more about the conference and register, please visit: www.GCandE.org

JOB OPPORTUNITIES

METRICS, INC.

Metrics, Inc.

Description: Contract Analytical Pharmaceutical Laboratory, please see website:
(www.metricsinc.com)

Job Openings: Technical Sales Specialist, Analytical Chemist, Lab Analyst, & Development Scientist I
All job descriptions found below.

Contact Information: Sally Hamilton, HR Manager
(252-317-3803 phone / 252-758-8522 fax / e-mail sally@metricsinc.com)

METRICS, INC. TECHNICAL SALES SPECIALIST

General Function

The experienced Technical Sales Specialist is responsible for driving sales efforts within the Northeast region for a contract pharmaceutical development company. It is the overall responsibility of the Technical Sales Specialist to acquire new business with new prospects and increase business with existing customers using proven selling techniques. This is a field-based position in which the person will manage key accounts within the Northeastern U.S. Salary is commensurate with experience and education.

Responsibilities

- Actively seeks new business with new prospects and seeks to increase business with existing customers using proven selling techniques; representing the company at trade shows and professional meetings, using "networked" contacts, etc.
- Travels between 30-60% as needed.
- Pursues leads and prospects by consistent follow-up to include teleconferences, meetings with clients, making presentations, etc.
- Communicates client preferences and feedback throughout the Metrics Sales Team, Business Development Unit, and other departments within the company on a regular basis.
- Generates strategic plans for each client and for each service offering, and implements such plans in an effort to close business.
- Responsible for developing a preferred vendor relationship and/or status with specific targeted companies.

- Participates in overall sales planning and strategy.
- Responsible for sales results for assigned accounts/territories, utilizing a team selling approach, which is directed and coordinated by Sales Management.
- Provides sales mix and volume consistent with the company's business plans and departmental sales goals.
- Highly energetic and highly motivated.
- Able to work independently in a team environment.
- Comfortable working in a fast-paced and rapidly changing environment.

Qualifications

Candidate must have a Bachelor's Degree in a scientific or business area and 2-4 years prior sales experience in the contract research space. Pharmaceutical development or clinical research experience is a strong plus. Excellent communication skills, written skills, presentation skills, and computer skills are a must.

METRICS, INC. **ANALYTICAL CHEMIST**

Typical Description of Work

- Perform established methods independently.
- Under general supervision, develop methods of analysis for known chemical entities and dosage forms using routine and simple techniques.
- Maintain an accurate, well-kept laboratory notebook to document analysis.
- Solve problems with a single method, instrument, or process.
- Interpret data, draw conclusions, and make recommendations based on the data.
- Under general supervision, author analytical procedures and validation documents.

Typical Interactions

- Discuss methods and results with client representatives. Recommend approaches to analytical strategies.
- Witness lab notebooks of other staff and provide feedback on writing effectiveness.
- Train new staff in general lab operations and GMP compliance.

- Train less experienced analysts in the use of simple to complex technology.

Minimum Requirements

- Bachelor's degree in chemistry with one year of professional experience in analytical chemistry **or**
- Master's degree in analytical chemistry **or**
- Associate's or Bachelor's degree in science with three years of professional experience in analytical chemistry **or**
- Two years of college course work in science with five years of professional experience in analytical chemistry.

METRICS, INC. **LAB ANALYST**

Typical Description of Work

- Perform established methods under general supervision.
- Interpret data, draw conclusions, and make recommendations based on the data.
- Serve as lab assistant to senior analyst.
- Assist senior analyst in developing methods of analysis for known chemical entities and dosage forms using routine and simple techniques.
- Maintain an accurate, well-kept laboratory notebook to document analysis.

Typical Interactions

- Discuss methods and results with senior scientists and managers.
- Witness lab notebooks of other staff and provide feedback of writing effectiveness.

Minimum Requirements

- Bachelor's degree in chemistry **or**
- Associate's or Bachelor's degree in science with one year of professional experience in analytical chemistry. **or**
- One to two years of college course work in science with two years of professional experience in analytical chemistry.

METRICS, INC. **DEVELOPMENT SCIENTIST I**

General Function

With general supervision assist and support process development, clinical trial batch manufacturing,

packaging and documentation for the **ANDA products**.

Typical Description of work

- With general supervision, develop and optimize suitable formulations and processes for ANDA products
- Design and perform experiments with general supervision
- Assist others in solving technical issues
- With general supervision, interpret data, draw conclusions, and make sound recommendations based on the data
- With general supervision, solve formulation and process problems
- Clinical trial batch manufacturing and packaging of ANDA products
- Stability testing
- Documentation, including regulatory submission writing of ANDA products
- With general supervision author: SOPs, IQ/OQ/PQ documents, development/technical reports, and CMC sections for regulatory submissions, as directed
- Ensure that all work is accurate, precise, properly documented and performed within GMP requirements
- Maintain competence and training documentation for relevant development equipment and processes
- Complete projects on time
- Maintain an accurate, well-kept laboratory notebook to document development work
- Help develop analytical specifications and stability protocols
- Make commitment of own time and resources to assigned projects
- Witness lab notebooks of other staff and provide feedback on writing effectiveness

Typical Interactions

- With general supervision, serve as a liaison on projects being conducted with client companies

- With guidance from senior staff, discuss formulations and processes with client representatives
- Recommend development strategies to senior staff
- Keep management informed of project status and issues
- Effectively supervise and manage assigned staff
- Work closely with analytical chemists to develop tests to provide quality control for pharmaceutical raw materials, drug substances, and dosage forms
- Train new staff in general pharmaceutical development methods and GMP compliance
- Train staff in the use of specific equipment and technology

Minimum Requirements

- Pharm.D. or Master's degree in pharmacy with the experience in the development of ANDA products is helpful **or**
- Master's or Bachelor's degree in chemistry, engineering, or related science with 2 years equivalent industrial pharmaceutical experience in the development of ANDA products is preferred **or**
- AAS degree, HS diploma or GED with five years of equivalent industrial pharmaceutical experience in the development of ANDA products is preferred

VOLUNTEER OPPORTUNITIES:

NATIONAL CHEMISTRY WEEK LOCAL COORDINATOR

National Chemistry Week is a community-based program of the Office of Community Activities. This annual event unites ACS local section, businesses, schools, and individuals in communicating the importance of chemistry to our quality of life. We are in need of someone to help organize the local ACS members develop a program(s) for this great event.

CHEMISTS CELEBRATE EARTHDAY LOCAL COORDINATOR

Chemists Celebrate Earth Day is an environmental awareness campaign. The event provides activities that are designed to enhance public awareness of important contributions made through chemistry in preserving our planet and improving our environment. The event is held annually on April 22. For more information visit chemistry.org/earthday.

If you are interested in volunteering for one of these positions, please contact Dr. Robert Hammond:

Robert M. Hammond, Ph. D., Department of Chemistry, 300 Science and Technology Building, East Carolina University, Greenville, NC 27858, (252) 328-9728, hammond@ecu.edu

STAY IN TOUCH WITH THE EDUCATION DIVISION

ChemunityNews is a bimonthly electronic newsletter that connects chemistry educators to the activities of the ACS Education Division. It provides updates on newly published resources and materials, programs for students and educators, and upcoming workshops and meetings. You may view a recent issue by visiting the ChemunityNews Archives at chemistry.org. To subscribe, simply email education@acs.org.

Chemical employers are encouraged to submit employment opportunity information to the section for distribution among the members of the Eastern North Carolina Section (ENC-ACS). This information will be published in the section's newsletter, which has a distribution of over 450 members. There is no charge for this service. Detailed job descriptions can be sent to: Jennifer Civelli, Secretary, ENC-ACS, Dept. of Chemistry, CFCC, Wilmington, NC, 28401 or by e-mail at jcivelli@cfcc.edu.

TRAVEL ASSISTANCE

The Eastern North Carolina Section of the ACS provides limited financial assistance to graduate and undergraduate students who are presenting research results at technical conferences. Awards up to \$300 may be requested from the section to subsidize travel. Awards can be used to defray transportation, accommodation, and registration costs. Required criteria:

1. The student must be currently enrolled at a university or college.
2. The student must be presenting an oral or a poster presentation. (For poster presentations, only two students will be supported per poster.)
3. The student may only receive one travel award per year.
4. The student agrees to present a poster of their presentation at one of the section meetings.

FACT IN CHEMICAL HISTORY

This Month in Chemical History

Harold Goldwhite, California State University, Los Angeles

hgoldwh@calstatela.edu

I don't want my readers to get the wrong idea; I do read books other than those featuring old science. In fact I read many mystery stories, and perhaps one day I'll write some columns about an interest of mine in scientific detectives in mystery fiction. But not today. The opening of this column was inspired by my reading recently "Lelia: The Life of George Sand" by Andre Maurois, translated by Gerard Hopkins

(Penguin Books, London, 1977). The life story of the great French woman novelist is splendidly presented in this book, including her liaisons with many distinguished men in the arts including Chopin. But my attention was caught by references to a man who was not one of Sand's lovers, but was a distinguished 19th.Century chemist.

"George Sand's Diary, February 12th., 1866: Dinner at Magny's dinner with my 'pals'. Their welcome could not have been warmer. They were all very brilliant except Berthelot, the great scientist ...

April 9th. 1866; Our Magny dinner with all the pals.... Berthelot did not open his lips. He and I exchanged not a single word."

Perhaps Marcelin Berthelot was overawed by the brilliance of the literary ensemble at those dinners which included Edmond and Jules Goncourt, Gautier, Flaubert, Taine, Renan, and Sainte-Beuve among others.

Berthelot (not to be confused with Lavoisier's contemporary and colleague Claude-Louis Berthollet) was indeed a great scientist. My account of his career draws on the Berthelot memorial lecture, delivered by Harold Bailey Dixon, a pioneer in reaction kinetics, to the Chemical Society of London on November 23, 1911.

Berthelot was born in Paris on October 25, 1827 and died, also in Paris, on March 18, 1907. His father was a physician and his parents sent their precocious son to a distinguished school, the College Henri IV, where he won the highest prizes in competition with scholars from all over Paris. His education was rich in the classics, but he decided to study natural sciences at university. He completed the full medical course but also worked at chemistry in the laboratory of Pelouze, a pioneer in natural products chemistry. He was appointed in 1851 as lecture assistant at the College de France to Ballard, who discovered bromine. He earned his doctorate in three years with a thesis "On the Combinations of Glycerine with Acids, and on the Synthesis of the Immediate Principles of Animal Fats". Organic chemistry was now his chosen domain.

The next few years saw successions of successes in this field. Studies of the chemistry of sugars were followed in 1855 by the earliest of his papers on the total syntheses of organic compounds from simple building blocks: ethanol from ethylene; and formic acid from carbon monoxide. He followed this up with syntheses of hydrocarbons, methanol, and oxalic acid. Passage of hydrogen through a carbon arc yielded acetylene which could be elaborated into more complex organic compounds and also trimerized to benzene, parent of the aromatics. These syntheses of organic compounds from relatively simple starting molecules were perhaps the true death of the vitalism doctrine in organic chemistry. Berthelot was appointed Professor in the Ecole Supérieure de Pharmacie in 1859 and lectured there, but continued his researches at the College de France. In 1860 his most famous book appeared: "Organic Chemistry founded on Synthesis." Wide recognition of Berthelot's talents soon followed; membership in the Academie des Sciences and in foreign chemical societies; prizes from the Academie, the Royal Society, and the Chemical Society of London.

In mid-career Berthelot turned to topics in physical chemistry. His studies of the ethanol/acetic acid/ethyl acetate/water system with his student St. Gilles were among the earliest of both reaction kinetics and equilibrium. He also studied the partition of solutes between immiscible solvents. But his great work in this area was in thermochemistry. From 1863 until 1879 he and his students established the thermochemical data for hosts of reacting systems which he published in two major books. He enunciated his (incorrect) "principle of maximum work" that every chemical system reacts to produce the maximum amount of heat energy – which ignores what we now know of the effects of entropy. But that was a considerably later notion. Berthelot also made important contributions both theoretical and practical to the study of explosions.

In a subsequent column I will discuss Berthelot's contributions to public life in France – and to the history of chemistry.

Have a Wonderful Spring!!

