

THE CAPITAL CHEMIST



A Publication of the Chemical Society of Washington Section of the American Chemical Society

December Featured Speaker: Bill LaCourse

Dr. Bill LaCourse, University of Maryland, will speak at the joint Chemical Society of Washington/Washington Chromatography Discussion Group meeting on December 17th at the U.S. Pharmacopeia in Rockville. His talk is entitled, "Adventures in Analysis: New Approaches to Old Problems."



William R. LaCourse is the Dean of the College of Natural and Mathematical Sciences and Professor of the Department of Chemistry and Biochemistry at the University of Maryland, Baltimore County (UMBC). He is also a Kauffman Fellow of Entrepreneurship, and past CEO/cofounder of Aurora Analytics, LLC. He received his Ph.D. in Analytical Chemistry from Northeastern University in 1987. After completing a postdoctoral appointment at Ames Laboratory, he held the position of Scientist at Iowa State University/Ames Laboratory until he joined the faculty at UMBC in 1992. In 2005, he founded UMBC's Chemistry Discovery Center, which has dramatically improved student performance in introductory chemistry courses and now oversees the College's Active Science Teaching & Learning Environment (CASTLE), which is designed to study active-learning pedagogies across the STEM disciplines. In addition to his administrative experience at the University level, Dr. LaCourse has five years of industrial experience in the pharmaceutical industry on the development of product assays of both human and veterinary formulations. His research interests include basic and applied research on hydrodynamic electroanalytical techniques in chromatographic and electrophoretic systems. He has 111 publications, including 20 chapters and a sole-authored book entitled *Pulsed Electrochemical Detection in High Performance Liquid Chromatography*, and two issued patents. He has made over 250 presentations at national and international meetings. Dr. LaCourse is the recipient of several chemistry and research awards, an Editorial Advisor for *Analytica Chimica Acta*, an Associate Director of the California Separation Science Society (CASSS), and an active member of local and national professional societies and groups.

Abstract, "Adventures in Analysis: New Approaches to Old Problems"

Abstract: The University of Maryland, Baltimore County (UMBC) has been at the forefront of new and innovative ways to promote student success. Motivation is a key ingredient of persistence. One approach is to provide opportunities for undergraduate and graduate students to work on real-world problems using high-end analytical instrumentation (e.g., mass spectrometers, NMR, HPLC, GC, and spectroscopy). In doing so, students learn to collaborate, critically think, communicate, and learn marketable skills. We are achieving this goal by reinventing the typical "core" facility at a university into an active teaching and learning environment, which is operated by a facility manager under the College of Natural and Mathematical Sciences. This presentation will visit an array of analytical applications being investigated in the Molecular Characterization and Analysis Complex (MCAC), which in itself is a new approach for an old problem.

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Featured Items:

- Read about Bill LaCourse, the featured speaker at the December meeting
- Apply to be a USNCO mentor
- See photos from the YCC National Chemistry Week event
- Read about the Project SEED Research Symposium, held October 18th

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One of the oldest analytical techniques in separation science is thin layer chromatography (TLC). This technique has always suffered from lack of ability to rapidly identify separated compounds. In the MCAC, we have developed an ambient ionization source for mass spectrometry that functions as a surface analysis reader. In a matter of minutes, it can non-destructively scan an entire TLC plate and get mass spectra of each of the spots. This novel approach solves the age old problem of inconclusive information from TLC analysis.

The separation and direct detection of carbohydrates and glycans has been successfully accomplished using high performance anion-exchange chromatography followed by pulsed amperometric detection (HPAEC-PAD). A continuing analytical challenge has been the selective identification of carbohydrates versus other compounds, especially for complex samples. Typically, this problem is overcome by offline clean up and isolation. We have been working on the development of multiplex-pulsed amperometric detection (MPAD), which allows the analyst to confirm the presence of glycans/sugars from peptides and other interferences without the need for offline prep or multiple runs.

Another issue that has plagued us all is sensitivity, or how low can one go! Since the human olfactory system can sense off flavor compounds (OFCs), such as geosmin, as low as 10 ppt, it is imperative that analytical methods be able to quantitate below these levels. The MCAC has been working on the development of a method for OFCs using gas chromatography with mass spectrometry. Through the use of an improved chromatographic separation, optimized mass spectroscopy parameters, and a novel online trap and purge for a head space sampler, we have been able to achieve parts per quadrillion limits of quantitation and detection for water samples.

In conclusion, the MCAC has developed into an active learning facility, which supports internal and external researchers and scientists, for inspiring students to persist in STEM. This presentation will highlight several of their achievements.

Dinner Meeting Details

When: Wednesday, December 17, 2014, 6-8pm

Where: U.S. Pharmacopeia (5645 Fishers Ln, Rockville, MD 20852)

Cost: Free

Menu: A light dinner (TBD) will be provided.

Reservations: Reservations: Make reservations by Monday, December 15, 2014, COB, through the Washington Chromatography Discussion Group's website (<http://wcdg.squarespace.com/meetings/>).

Directions to the US Pharmacopeia:

From I-270: Take Exit 6, east on 28; turn left onto 28. Continue on 355/Rockville Pike, turn left onto Twinbrook Parkway, right onto Fishers Lane. USP will be on the immediate left.

From I-495: Take Exit 34 for 355/Rockville Pike, north on 355, turn right onto Twinbrook Parkway, right onto Fishers Lane. USP will be on the immediate left.

Metro: Exit at Twinbrook station on the RED line. Exit to the east and cross parking lot to Fishers Lane. Cross Twinbrook Parkway, and USP will be on the immediate left.

Parking: There is street parking on Fishers Lane. Parking meters are in effect 7 am until 7 pm Monday - Friday. There is a visitor parking in the lot behind the USP (north on Twinbrook Parkway) that is free for USP visitors. Parking is also available at the Twinbrook Metro Station, subject to Metro fees.

APPLY NOW: U.S. National Chemistry Olympiad (USNCO) High School Chemistry Mentor Needed

Sponsored by the American Chemical Society

The USNCO seeks a College Chemistry Mentor. Some of the duties and responsibilities associated with this position are:

- Preparing students for the International Chemistry Olympiad (IChO) competition,
- Helping to conduct a two-week study camp for the nation's brightest twenty chemistry high school students at the United States Air Force Academy in Colorado in June of 2016, 2017, and 2018,
- Developing practice problems, theoretical, and practical tests for the study camp,
- Accompanying the U.S. team at the IChO in July.

Most students at the study camp have completed Advanced Placement Chemistry or the equivalent; therefore instruction at the camp is well beyond the level of high school general chemistry courses. The curriculum also includes considerable laboratory work.

Successful applicants are expected to have background in one or more of the areas of organic, inorganic, analytical, physical, or biochemistry, with classroom experience, and should demonstrate involvement with students in special projects or activities. Applicants must be prepared to make a three-year term commitment. ACS pays an honorarium and most expenses associated with the study camp and the IChO.

Interested individuals may obtain an application and additional information at: www.acs.org/olympiad or contact Margaret Thatcher, Program Administrator, at USNCO@acs.org or 202-872-6328. The deadline to submit an application is January 23, 2015. Applicants must arrange to send three letters of recommendation directly to Cecilia Hernandez, Assistant Director Endowed Programs, Education Division, at c_hernandez@acs.org by February 6, 2015.

Younger Chemists Committee (YCC) News and Events

Contributed by Dr. Ajay Mallia, Dr. Deana Jaber, and Dr. Joseph Houck, CSW YCC Committee

National Chemistry Week: Halloween and Mole Day Celebrations

As part of National Chemistry week, the CSW Younger Chemists Committee (YCC) celebrated Mole Day and Halloween on October 23, 2014 at the University of Maryland, College Park. About 40 attendees enjoyed Halloween and National Chemistry Week-themed chemistry demonstrations presented by the UMD-ACS students affiliates (UMD-SAACS) and UMD graduate students.



Dr. Joseph Houck, (CSW YCC committee member) presented a team trivia competition, "What Do You Know About Candy and Chemistry?," and prizes were given to the winning team members. A gift card for the best costume was awarded to Mr. Michael Mandler and Ms. Hannah Lebovics, undergraduates at UMD.

A candy collection drive was also organized for U.S. troops and the collected items were donated to Operation Gratitude. The CSW YCC acknowledges the collaboration and support of UMD-SAACS and the CSW outreach activity committee for the success of this event.

Additional photos of the event are located on the next page.

Photos From the Younger Chemists Committee (YCC) National Chemistry Week Event



Left photo: Dr. Joseph Houck conducting a trivia game. Right photo: best costume award winners Ms. Hannah Lebovics (left) and Mr. Michael Mandler (center) receiving their gift card from Dr. Joseph Houck (right).



Above: Chemistry demonstrations at the event.

Project SEED Research Symposium Held on October 18

Contributed by Dr. Ajay Mallia, Chair, CSW Project SEED committee

For the last four decades, Project SEED has provided hands-on scientific research opportunities with a mentor at a research institution to more than 9,000 economically disadvantaged high school students. This year, CSW's Project SEED program supported 20 high school students from DC, VA, and MD high schools.

CSW recognized the 2014 Project SEED fellows at the Project SEED Research Symposium that was held on October 18, 2014 at ACS Headquarters. Dr. Ajay Mallia (CSW Project SEED chair) gave a brief overview of Project SEED and congratulated all the students on their successful completion of the program. All the Project SEED fellows gave a flash talk about their summer research and also presented their research at a poster session. Dr. Kathryn Hughes, CSW president, presented certificates of accomplishment to each Project SEED fellow, and Ms. Raihanah Rasheed from the ACS Project SEED office discussed the benefits of Project SEED and the opportunities for college scholarships through Project SEED. The Symposium poster presentation event was well attended by the students' parents, high school chemistry teachers, Project SEED mentors and graduate student mentors, and members of CSW.

An award for the best research presentation award was presented to Ms. Feven Gezahegn, a first-year (SEED-1) fellow from Woodrow Wilson High School, and Mr. Sang Ho Jee, a second-year (SEED-2) fellow from Old Mill High School won second prize for his research presentation.



Top left: Mr. Andy Zhang, first-year (SEED-1) fellow presenting his research. Top right: Mr. Jonathan Lee (center) at the poster session with his SEED mentor Professor Andrei Vedernikov (right) and Graduate Student mentor Mr. Elikplim Abada (left). Bottom: Participants enjoying the event.

Project SEED Needs Your Support!

Project SEED cannot operate without the help from individuals and companies that support the Scientists-in-training. Are you interested in supporting Project SEED? Last year we unfortunately turned away many applicants because of lack of funding. CSW has established the Noel Turner Memorial Fund to help support Project SEED. Your donation is matched dollar-for-dollar, and will be used for student stipends (\$2500 for the SEED-1 and \$3000 for the SEED-2 program). Your contribution is fully tax deductible. For more information contact the CSW Project SEED chair, Dr. Ajay Mallia (vajaymallia@gmail.com) or CSW (csw@acs.org, 202-659-2650).

Upcoming Project SEED Deadlines

For Mentors:

The deadline for Project SEED mentors to send their research proposals is January 30, 2015. If you are interested in mentoring a Project SEED student, please contact CSW's Project SEED chair, Dr. Ajay Mallia at vajaymallia@gmail.com.

For Students:

High school teachers and counselors can submit applications for potential Project SEED candidates for 2015. In order to be eligible to participate in Project SEED, students need to have completed a year of chemistry classes by June 2015 and also be able to prove economic disadvantage. For information on Project SEED student eligibility, contact CSW's Project SEED chair, Dr. Ajay Mallia at vajaymallia@gmail.com, visit the Project SEED website at www.acs.org/projectseed, or contact the ACS project SEED office at projectseed@acs.org.



Left: Ms. Feven Gezahegn first-year (SEED-1) fellow, Woodrow Wilson High School, receiving a research presentation award from Dr. Ajay Mallia (Chair, CSW Project SEED). Right: Mr. Sang Ho Jee second-year (SEED-2) fellow, Old Mill High School, receiving a research presentation award from Dr. Ajay Mallia (Chair, CSW Project SEED).

2014 CSW Student Travel Award Application Process

The Chemical Society of Washington is pleased to announce a travel award to defray travel and/or registration costs to a National ACS meeting. Eligible expenses include meeting registration and travel expenses, such as airfare and lodging. Applicants should submit the following to CSW (email: csw@acs.org) by January 16, 2015:

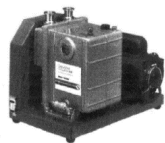
1. A cover letter stating how and why attending this ACS meeting will promote his/her career;
2. The applicant's CV;
3. A letter of recommendation from the student's mentor explaining why the student deserves the award and how this will help his/her professional development;
4. An accepted abstract with proof of acceptance.

Within three weeks of returning from the ACS meeting, the awardees should submit receipts to the CSW Treasurer for any or all of the eligible expenses described above, after which the Treasurer of the Chemical Society of Washington will issue a check to each of the awardees. After returning from the conference, awardees will be asked to present their posters at one of the upcoming CSW dinner meetings.

The award is not intended for postdoctoral fellows. There will be a maximum of 4 awards available for each National meeting. Each award will be for \$500 and award of this stipend will be based on the review of the above materials. The award is open to students who are graduate students in the jurisdiction of the Chemical Society of Washington.

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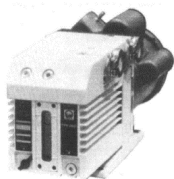
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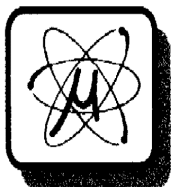
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There are many companies and organizations searching for chemical and biochemical personnel to fill important jobs in their organizations.

- Companies for laboratory and management positions
- Universities & Colleges for teaching positions and laboratory personnel
- Hospitals for technical and research personnel

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- www.mboservices.net
- <http://membership.acs.org/W/WashDC/career.html>



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Editor, Business Manager

Jessica L. Rasmussen

Voice: 202-659-2650

Email: csw@acs.org

Publisher

Chemical Society of Washington

Business Staff

Christopher W. Avery, Chair

CSW Publications Committee

202-659-2650

Advertising Manager

MBO Services

PO Box 1150, Marshfield, MA 02050

781-837-0424 voice

www.mboservices.net

CSW Correspondence

CSW, 1155 16th Street, NW, 0-218

Washington, DC 20036

202-659-2650 voice

email: csw@acs.org

<http://csw.sites.acs.org>

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CSW Calendar of Events

December

- 12/1: Board of Managers Meeting
- 12/17: Joint CSW/WCDG Meeting

January

- 1/16: CSW Student Travel Award Applications Due
- 1/23: USNCO Mentor Application Deadline
- 1/30: Project SEED Mentor Application Deadline