



THE FILTER PRESS

Newsletter of the Georgia Section of the American Chemical Society

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Testing the Limits of Astrochemistry: Integrative Studies in Laboratory Spectroscopy, Observational Astronomy, and Chemical Modeling

Dr. Susanna L. Widicus Weaver, Assistant Professor of Chemistry, Emory University
Tuesday, May 12, 2009

It is now thought that meteorite and comet impacts delivered water and biological material to the early Earth, seeding the formation of life. Fundamental biological molecules such as amino acids and sugars have been discovered in meteorites, but none of these species have yet been detected in the interstellar medium (ISM). The mechanisms and environments leading to the formation of biologically-relevant molecules therefore remain unclear. While both the number of detected interstellar molecules and their chemical complexity continue to increase, our understanding of the processes leading to their formation is severely lacking. Only interdisciplinary studies with contributions from laboratory spectroscopy, observational astronomy, and chemical modeling will enable us to elucidate the dominant chemical mechanisms in space. In this talk, I will discuss my plans for a research program that fully integrates these three fields of study. In the laboratory, we are developing new high-sensitivity spectral techniques for the terahertz (THz) frequency range. We are combining these techniques with novel production mechanisms to study transient molecules that are key to prebiotic chemical pathways in the ISM. We will use the spectroscopic results as a guide to search for these molecules in space.

From these astronomical observations, we can determine the abundance, temperature, and spatial distribution of these species in interstellar clouds. We will then incorporate this information into interstellar chemical models and test the influence of varying physical conditions. The revised models can be used to predict other important chemical pathways, guiding future laboratory and observational studies. Such studies will enable us to pinpoint the interstellar chemical pathways leading to biological molecules and offer clues to the processes leading to the formation of life.

Dr. Widicus Weaver received her B.S. in Chemistry from Illinois Wesleyan University in 2000 and her Ph.D. in Chemistry from the California Institute of Technology in 2005. She was then a postdoctoral scholar in the departments of Chemistry and Astronomy at the University of Illinois at Urbana-Champaign. She joined the faculty at Emory in June, 2008.

Additional information on this research can be found at <http://chemistry.emory.edu/faculty/widicusweaver/group.html>

**Reservations by 5PM Thursday, May 7th—
continued on page four, with all details.**



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The Filter Press went **GREEN!**

The Executive Committee voted that beginning with the April 2009 Filter Press, and coincident with *Chemists Celebrate Earth Day*, the Filter Press will only be distributed electronically.

If you do not have access to email, kindly provide the mailing address that you wish to be used to the editor, Lissa Dulany, 201A 5th St NE, Atlanta, GA 30308 (or by email to lissa@dgmfgmt.com) and a Local Section Volunteer will continue to mail a paper copy to you.

If you DO wish to have an electronic copy of the Filter Press, but are not currently receiving email from the Georgia Section, or wish to change the electronic address at which you are contacted, please send your preferred email address by email to hernandez@gatech.edu.



Women Chemists Committee Event

Join the WCC for "Chemistry and Cooking" on Tuesday, June 2nd at 6:30 pm at Toulouse! Shirley Corriher, a biochemist and author of *CookWise: The Hows and Whys of Successful Cooking*, winner of a James Beard Foundation award, and author *BakeWise: The Hows and Whys of Successful Baking* will be our speaker. Her book *BakeWise* shows how scientific insights can be applied to the ideas of baking. After speaking, she will be available for book signing. There is a limited number for attendance so please RSVP as soon as possible to ensure your spot. **The cut off date for RSVP is May 22nd**. Hors D'oeuvres and drinks will be served.

Location: Toulouse Restaurant, 2293 B Peachtree Road
Atlanta, GA 30309
Time: 6:30 – 8:00 pm
Cost: \$25.00 per person (includes a copy of *BakeWise*)

RSVP to Lynn Sullivan by May 22 by email to dsulliva@aerotek.com or by phone to 770-250-1223.

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From the Chair

Fellow chemists,

Thanks for a moment of your time! Our panel discussion in April provided many of us with a reminder of why we do what we do—we all love chemistry! But our panelists did a wonderful job of developing a theme—that of “dual competencies”. In short, it is not enough to be an excellent chemist—one needs to bring at least one other skill to the table. Joe Rainey discussed the importance of science nerds (us!) developing communication and interpersonal skills, Giovanni Gadda reminded us of the importance of enthusiasm and a positive attitude, Deanna Morrow Hall highlighted the advantages of dual degree paths—you can be a chemist *and* a journalist, a chemist *and* a computer scientist, a chemist *and* a librarian, Monir Clark reflected on the importance of being proactive, asking questions and contributing in a positive way to your workplace.

If you are among our members facing the challenges of being laid off, down-sized, right-sized or terminated, we invite you to use the networking opportunities the ACS-Georgia Section provides to your advantage. Come to the May meeting- and stay tuned (to your email box!) for special summer events planned by the WCC and the Executive Committee.

This September will mark the 75th anniversary of the Herty Medal. Please join us at the awards dinner, recognize student researchers by attending the Herty Medalist Undergraduate Research Seminar or volunteer to help with the Herty affiliated outreach activities. Details coming soon!

Meanwhile, if you have questions about how to get involved, or an idea for a great meeting, please contact me. I am always happy to hear good ideas.

Thanks for your time,
Debbie Sauder (dsauder@ggc.usg.edu)

Mark your calendars for the Herty75 events

The 75th Herty Medal Symposium will be held on the afternoon of September 17, 2009, at Georgia Tech's Molecular Sciences & Engineering Building to celebrate "Chemistry for Life in the Southeast." Several former medalists will return to speak on issues concerning chemistry's role in solving challenges in energy, sustainability, and human health. The 75th Herty Medal will be awarded to Professor Craig Hill of Emory University later that evening at the Georgia Tech Alumni House.

Several Future Medalists Symposia will be held throughout Atlanta during the morning of September 18, 2009. Students in grades 7 to 12 will have an opportunity to participate. Details on the symposia and an essay contest with prizes will be announced soon.

The Herty Medal Undergraduate Research Symposium (HMURS) will be held on the afternoon of September 18th at Morehouse College. Several former medalists will present their work at a level accessible to undergraduates. Students from any college or university in the Atlanta area are encouraged to present posters on their recent research.

Selected poster presenters will be awarded a top prize of a travel grant to a national ACS meeting and a year's membership in the ACS.

2009 Georgia Local Section Mini-grants Recipients Chosen

The committee judging the proposals submitted for the 2009 mini-grants reported an increased number of applicants made the selection process challenging. The Mini-grants chosen this year will help support these activities:

- Chemistry demonstration mini-kits for elementary age children (Bryan Hearn)
- Learning and exploration trips for AP Chemistry students & dissemination of knowledge gained to non-AP students and parents (Linda Patterson, Wheeler High School)
- Expansion of WIC/NCW outreach (Courtney Phillips, WIC, Georgia Tech)

Congratulations! Look for updates in the Filter Press.

May Meeting: Wednesday, May 12th

Testing the Limits of Astrochemistry: Integrative Studies in Laboratory Spectroscopy, Observational Astronomy, and Chemical Modeling
 Dr. Susanna L. Widicus Weaver, Assistant Professor of Chemistry, Emory University

Location: Georgia Tech**Pettit Microelectronics Research Building**

791 Atlantic Drive NW

Atlanta, GA 30332

(404) 894-5100

Directions available at the link above

6:30 PM meet & mingle, cash bar

7:00 PM dinner served

8:00 PM meeting presentation

Dinner Menu:

- Salad: Mixed Field Greens w/Citrus Vinaigrette
- Entrée: choice of **Chicken** Marsala or (vegetarian) **Risotto** Balls w/Tomato Basil Sauce
- Served with Roasted Red Bliss Potatoes and Seasonal Vegetables
- Dessert: Traditional Red Velvet Cake
- Iced Tea and Coffee

\$25 for members, \$15 for retirees, teachers and students. Meeting sponsored by Astrix Technology Group.

RSVP with entrée choice (**chicken** or **veg. risotto**) required to David Gottfried by phone to 404-894-0479 or by email to david.gottfried@mirc.gatech.edu by 5PM Thursday, May 7th.

Payment should be made to the "Georgia Section ACS" and will be collected at the door. If you make a reservation and then don't attend, you will be charged for the meal, as we have to guarantee the number of meals.

Chemists Celebrate Earth Day (CCED)



The ACS Georgia local section participated in Chemists Celebrate Earth Day (CCED) at several venues this year. The ACS theme for this year's Earth Day was **Air—The Sky's the Limit**, and the unifying event was recognizing our carbon footprint and commitment to its reduction through our daily activities.

At the annual Georgia Tech Earth Day celebration on Friday, April 17, the Georgia local section partnered with the Georgia Tech student affiliates (organized by Emily Nicholson) to host an exhibit booth. The centerpiece of the booth was an individualized analysis (with fun computer animation) of ones ecological impact (<http://earthday.net/footprint/>). It was eye-opening for most to realize the level of resources required to support our current lifestyles.



This exhibit booth was recycled (appropriately enough) for the Earth Day event at the High Meadows School in Roswell on Monday, April 22. Assisted by student helpers Maital Gottfried and Kyle (continued to page 5)

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(continued from page 4) McKean, the students, parents, and teachers enjoyed the footprint calculator as well as the fuzzy Enviro-Moles and the demonstration of carbon dioxide (antacid tablet plus water) powered rockets.



2009 Georgia Science and Engineering Fair

David Gottfried organized the judges from the Georgia Section of the American Chemical Society for the Special Awards in Athens. This year's special prizes went to:

- | | |
|--------------------|------------------------------------------------------------------------|
| Junior-2nd place: | Brandon Bedford and Connor Kilberger, Roberts Middle School, Jonesboro |
| Junior- 1st place: | Sarah Devaro, Savannah Country Day, Savannah |
| Senior-3rd place: | Smitha Ganeshan and Ahshata Shirahatte, Northview High School, Duluth |
| Senior 2nd place: | Carmina Escalante, Clark Central High School, Athens |
| Senior 1st place: | Kaj Hansen, Carrolton High School, Carrolton |