



Green Mountain Local Section of the American Chemical Society

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Green Mountain Section website:
<http://membership.acs.org/g/greenmt>

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Upcoming Events

April 11, 2007 – Glenn Crosby at UVM on Avogadro and the history of the mole concept

April 13, 2007 – Glenn Crosby at St. Michael's College on the connection between research and teaching (see page 4)

April 26, 2007 – ACS Tour Speaker Michael Tunick on the chemistry of cheese, in Rutland



ACS website: www.Chemistry.org

GMLS April Newsletter

“Avogadro and Cheese”

This month, the Green Mountain Local Section is sponsoring two talks: April 12th a talk on “Avogadro’s Number” in Burlington, and April 26th a talk on the “Chemistry of Cheese” in Rutland. In order to give equal billing to these talks they appear on the next page. Our lead-off story is a report from the Government Affairs Committee.

Update from the Green Mountain GAC



Over President's Day week in February, Ralph Stuart, Chris Allen and Sarah Locknar met with representatives from the offices of Rep. Peter Welch, Sen. Bernie Sanders and Sen. Patrick Leahy to advocate for increased science funding. All of the representatives were enthusiastic about our requests for increased science funding, and much to our delight, we learned that Sen. Sanders had already signed on to the proposed bills.

During the meetings we also offered to act as a link to the wealth of knowledge and opinion on chemical issues in the state. Much to the surprise of the Committee, they have already been contacted by Rep. Welch's office regarding some pending legislation.

An email list for discussion of issues brought up by our congressional offices, and of other political, chemistry-related issues has been set up. The GAC has taken the liberty of signing up all Vermont Legislative Action Network members, but any Vermont Chemist is welcome to join (or unsubscribe). Summaries of the discussions will be sent to our congressional offices so that they can see our opinions on these matters. It is the hope of the Committee that people will free to speak their minds on the issues.

To subscribe to the list, send an email to listserv@list.uvm.edu with "SUB GMACSGR your name" in the message box. No subject line is necessary. To unsubscribe, send the message "UNSUB GMACSGR" to the same email address. To post to the list, write to GMACSGR@list.uvm.edu.

**Glenn Crosby, Emeritus Professor
Washington State University
Pullman, Washington**



**“All Things Great and Small:
Avogadro and the Concept of the Mole”**

When: Wednesday, April 11, 2007
Lecture at 7:00 p.m.
Dinner at 5:00 p.m.

Where: Lecture: Angell B-106
University of Vermont
Burlington, Vermont

Dinner: Sweetwater’s
Church Street
Burlington, Vermont

Abstract: The mole concept plays an enormous role in chemistry. The speaker will trace the origin of the mole concept, its impact on the science of chemistry, and the pivotal role the concept played in establishing a scale of atomic weights and thus placing chemistry on a quantitative basis, using historical anecdotes and graphic examples of the size of the Avogadro number and why it is the number that it is [bio on page 4].

Directions: Once at the UVM campus, Angell is the lecture hall connected to the Cook chemistry building. For a much more detailed map on the UVM website, go to: www.uvm.edu/about_uvm/maps_directions/ and with a click on the Fleming Museum, Cook/Angell will show up. Use the parking filter to find nearby parking lots - all are free after 6:00 p.m. Although the Fleming’s lot is nearest, you may have to go to one of the others if full.

RSVP for dinner: Willem.Leenstra@uvm.edu

**Michael Tunick, Research Chemist
USDA Agricultural Research Service
Wyndmoor, Pennsylvania**



**“Molecules to Mozzarella:
The Chemistry of Cheese”**

When: Thursday, April 26, 2007
Lecture at 6:00 p.m.
Dinner afterwards

Where: Lecture: Main Lecture Hall
Rutland High School
Rutland, Vermont

Dinner: Three Tomatoes
88 Merchants Row
Rutland, Vermont

Abstract: Coagulation of milk, removal of whey, and ripening are all required when making cheese, and chemistry is involved every step of the way. This talk describes the procedure from raw milk to final product, and illustrates the differences between cheese types, including the development of the many flavors in cheese [bio on page 4].

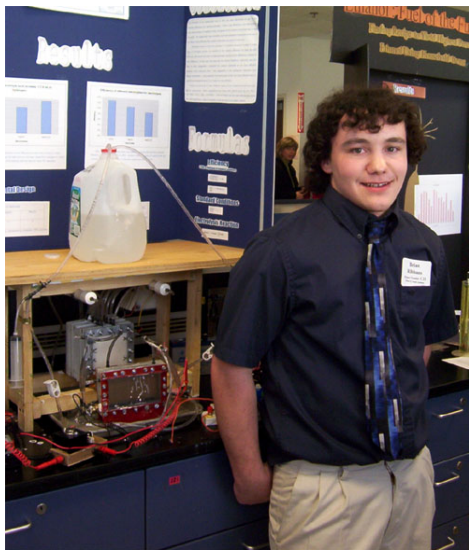
Directions: Proceed south on Rte. 7 to Rutland until you reach the intersection of Rte. 7 and Rte. 4 (next to CVS). Take a left onto Rte. 4/Woodstock Ave. Proceed along Rte. 4 for approx. 1 mile. At the traffic light next to McDonald’s, take a right onto Stratton Ave and proceed approx. 0.1 mile. Look for the RHS signs and turn left into the complex. The lecture hall is through the main entrance doors and to the left.

RSVP for dinner: Beth.Medeiros@omya.com

Vermont State Science and Mathematics Fair

Following tradition, the 44th Annual Vermont State Science and Mathematics Fair was held at Norwich University on Saturday, March 31. Fiona Case, Martin Case and Nathan Mahany (UVM graduate student) were the Green Mountain Local Section judging team.

Our top Green Mountain Local Section award was presented to Brian Ribbans (10th grade). The runners-up were Brittany Kleefisch (high school) and Alexis Locke (8th grade). An honorable mention went to Hans Heussy (10th grade).

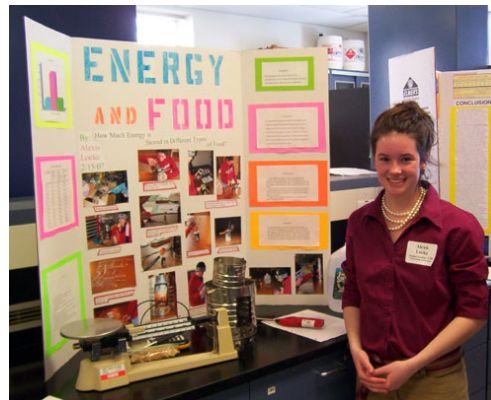


Brian Ribbans carried out research to determine which electrolytes were most efficient for generation of hydrogen (motivated by proposals for future use of hydrogen as a fuel). We were impressed by his use of the scientific method, and by the quality of the equipment he had designed and constructed for his study.



Brittany Kleefisch was interested by the iron oxide deposits she observed in the appliances in her home

(which uses well water). In her research she investigated the effects of pH on the deposition. We were particularly impressed by the amount of literature research she had done on her subject.



Alexis Locke is not the first science fair contestant to attempt to use calorimetry to compare the energy content of different foods, but we were impressed by her scientific approach and the way she refined her methodology based on early results: She introduced a dehydration step at the start of the experiment, and redesigned her combustion chamber to ensure the pepperoni oil did not escape.



Hans Heussy wanted to quantify the effects of CO₂ on growing plants. He designed a system in which a mixture of vinegar and sodium bicarbonate introduced CO₂ into a mini "green house" (an inverted half soda bottle) in which bean and mustard seedlings were grown. He found that the CO₂-enhanced environment produced plants that were significantly larger, but much weaker. We liked his careful experimental design.

The Second Annual Leavy Family Lecture



Dr. *Josh van Houten* of St. Michael's College was named as the Leavy Family Professor of Chemistry in 2004. The Leavy Family Chair is the first (and so far the only) endowed chair at St. Michael's. As one of the prerequisites of holding the endowed Chair, Prof. van Houten has chosen to use some of the discretionary resources to invite a prominent chemist/chemical educator to campus each year. The first Leavy Family Lecturer was Prof. Mort Hoffman of Boston University, in 2006. Prof. Glenn Crosby is this year's invited Lecturer.

On Friday, April 13, at noon, Prof. Crosby's lecture will focus on the connection between teaching and research in higher education. The talk is titled "Independent Research and Investigation: An Essential Component of the Education of Future Scientists and Engineers"

The event will take place at St. Michael's College, in room 201 of Cheray Hall (for a map of the campus, see www.smcvt.edu/campusmap/campusmap.asp)

Biographical Notes: Dr. Glenn Crosby



Professor Crosby is internationally recognized for his research in the field of molecular electronic spectroscopy, particularly the study of inorganic complexes. In addition to his research interests, Crosby has maintained a keen interest in teaching both graduates and undergraduates and has garnered numerous awards for these endeavors. In collaboration with his wife, Jane, he also directed several teacher professional development programs including a Master of Arts in chemistry for high school teachers in the Northwest, several regional teacher programs throughout the U.S.,

and an intensive laboratory program for high school chemistry teachers in Chile. Also, in collaboration with his wife and daughter he ran for 15 years the Cougar Summer Science Camp, a residential science program at WSU designed for 8th and 9th grade students. A longtime member of the American Chemical Society, Professor Crosby has been deeply involved in ACS governance ranging from committee membership to the Chair of the Division of Chemical Education to the Chair of the ACS Committee on Education. In December 2002 he completed nine years of service on the ACS Board of Directors. Currently he serves as the Chair of a Task Force on ACS Regional Meetings and as a consultant to the ACS Committee on Meetings and Expositions. In 2003 he was appointed Distinguished Visiting Professor of Chemistry and Chemical Physics at Concordia University in Irvine, CA where he plans to continue research in collaboration with undergraduates and faculty colleagues.

Biographical Notes: Dr. Michael Tunick



Michael H. Tunick received a B.S. in Chemistry from Drexel University in 1977. He was a student trainee at the Eastern Regional Research Center of the U.S. Department of Agriculture in Wyndmoor, PA, and was hired as a chemist upon graduation. He performed research on treatment of tannery waste with the Hides and Leather Laboratory until 1983, when he was transferred to what is now the Dairy Processing & Products Research Unit. He pursued a Ph.D. in Physical-Analytical Chemistry on a part-time basis during this period, receiving the degree from Temple University in 1985. He also became a research chemist in that year and was involved in a number of projects, including detection of mislabeled cheese and development of low-fat Mozzarella for the National School Lunch Program. He currently relates the effects of processing to changes in composition, texture, and microstructure of cheese and extruded whey proteins. He is the Secretary and a Past Chair of the ACS Division of Agricultural and Food Chemistry, and is Councilor and Past President of the Thermal Analysis Forum of Delaware Valley.