

The Blue Ridge Chemist

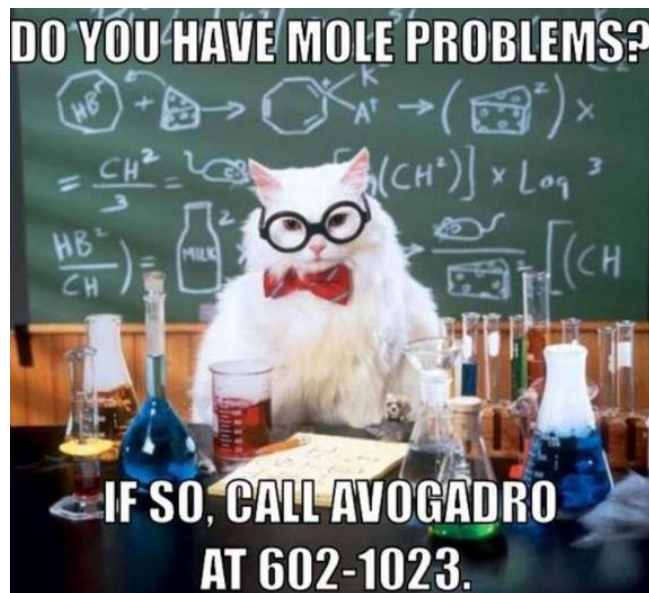
The Blue Ridge Chemist, since 1947 the
Official Local Section Publication of the
Virginia Blue Ridge Section, American Chemical Society



VOLUME LXVI

October 23, 2013

No. 7



Ferrum College Hosts the October Meeting

<http://www.acs-vbrs.org>

VIRGINIA BLUE RIDGE SECTION AMERICAN CHEMICAL SOCIETY

658th SECTION MEETING

Ferrum College

Wednesday, October 23, 2013

PROGRAM:

- 5:00-5:30 Tour New Facilities
5:30-6:02 Social Time, Virginia Room in Franklin Hall
6:02-7:00 Dinner, Virginia Room in Franklin Hall
7:00-8:00 Presentation, Room 106, in Garber Hall

The social time and dinner will take place in the Virginia Room in Franklin Hall. The talk will take place in GRB 106. The evening speaker is Dr. Timothy Long from Virginia Tech. His talk is titled "For Mole Problems, Call 602-1023"

The dinner consists of confetti salad (colorful greens, tomatoes, purple onions, cucumbers and Ferrum house dressing); slow roasted pork loin with onion compote; red wine beef pot roast with shitake mushrooms & roasted carrots; fennel Yukon gold mashed potatoes; Ferrum garlic green beans; maple leaf bread and chief's choice assorted dessert and beverage service (hot water with tea bags). Vegetarian meals will be made upon request. The cost for dinner is \$14, with students and retired members being half price.

Reservations for the dinner must be made by WEDNESDAY October 16, (7 DAYS BEFORE THE MEETING) by contacting Maria Puccio (540) 365-4238, or by e-mail to mpuccio@ferrum.edu, or by writing Maria Puccio, Ferrum College, GRB 309; 80 Wiley Dr. Ferrum, VA 24088.

*Dr. Timothy Long, Associate Dean,
for Research and International
Outreach in the College of Science
Virginia Tech*



Timothy Long received his B. S. in 1983 from St. Bonaventure University, followed by his Ph.D. in 1987 from Virginia Tech. He spent several years as a research scientist at Eastman Kodak Company before returning to Virginia Tech as a professor in chemistry. He has been a faculty member in the department of chemistry since 1999 and recently served as Associate Director of Interdisciplinary Research and Education, Fralin Life Science Institute at Virginia Tech. He serves currently as the Associate Dean for Research and International Outreach in the College of Science at Virginia Tech.

He received many prestigious honors in his field of polymer chemistry recently, including Chair of the IUPAC MACRO2012 Congress at Virginia Tech, the American Chemical Society (ACS) PMSE Cooperative Research Award and POLY Mark Scholar Award, as well as the Pressure Sensitive Tape Council (PSTC) Carl Dahlquist Award in 2011, Virginia Tech's Alumni Award for Research Excellence (AARE) in 2010, 2009 ACS Fellow, and invited organizer of the Gordon Research Conference – Polymers, and Chair, ACS Polymer Division.

He has also assembled a successful interdisciplinary research group and has been awarded ~ \$30M in research funding during his time with Virginia Tech. His group's continuing research goal is to integrate fundamental research in novel macromolecular structure and polymerization processes with the development of high performance macromolecules for advanced technologies. Current research efforts focus on polyelectrolytes, ion-containing polymers, and supramolecular hydrogen bonding for emerging technologies including drug delivery, elastomers, water purification, adhesives, and energy storage.

“FOR MOLE PROBLEMS, CALL 602-1023”

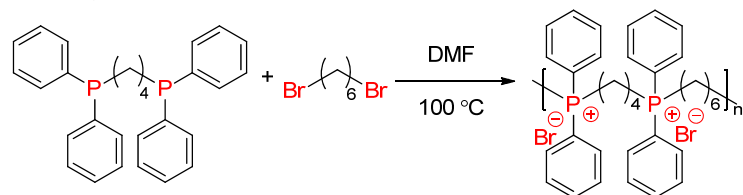
TIMOTHY E. LONG, SEAN T. HEMP, SHIJING CHENG

*Department of Chemistry & Macromolecules and Interfaces Institute,
Virginia Tech, Blacksburg, Virginia (USA) – telong@vt.edu*

Abstract

Does a mole of phosphoniums equal a mole of ammoniums? Charged polymers have received renewed attention due to their potential impact in a wide range of technologies from adhesives and elastomers to drug delivery vectors and electromechanical transducers. This lecture will focus on the introduction of cationic sites to various polymer architectures with a focus on ammonium, phosphonium and imidazolium ionic liquid monomers. Cationic sites on the main chain with mobile anions permit versatility due to a wide array of mobile anions, effectively tuning the glass transition temperature, thermomechanical properties, ionic conductivity, solubility, and chemical reactivity. Moreover, the addition of low molar mass ionic liquids to charged block copolymer membrane templates enables exceptional performance as electromechanical transducers. This lecture will highlight our recent advances dealing with a direct comparison of ammonium *versus* phosphonium cations. Due to a larger atomic radius and less electronegativity of the phosphorus atom relative to nitrogen, the phosphonium cation presents unique opportunities in biomedical and electromechanical technologies. Moreover, variation of the alkyl substituent on the cation center enables amphiphilic characteristics that offer impact for intracellular transport in drug delivery. Special attention will be devoted to a new family of phosphonium ionenes that permit an unprecedented investigation of the melt rheological behavior of cationic polyelectrolytes. This lecture will highlight complementary synthetic methods for the incorporation of the imidazolium and phosphonium cation, including controlled radical polymerization and ionene formation using vinyl imidazoles and difunctional imidazoles, respectively. In particular, 4-vinyl imidazole is well-suited for RAFT polymerization due to enhanced stability of the propagating radical, thus enabling the formation of well-defined block copolymer architectures. The lecture will conclude with a comparison of the structure-property relationships of phosphonium, ammonium, and

imidazolium containing multiphase morphologies (using SAXS, AFM, and TEM).



Scheme 1: New families of phosphonium-containing polymers include the recent synthesis of phosphonium ionenes and segmented block copolymers.

Selected References

1. Hemp, S. T.; Allen, M. H.; Green, M. D.; Long, T. E. *Biomacromolecules* **2012**, 13(1), 231-238.
2. Hemp, S. T.; Long, T. E. *Macromolecular Bioscience* **2012**, 12(1), 29-39.
3. Hemp, S. T.; Smith, A. E.; Bryson, J. M.; Allen, M. H.; Long, T. E. *Biomacromolecules* **2012**, 13(8), 2439-2445.
4. Cheng, S.; Zhang, M.; Wu, T.; Hemp, S. T.; Mather, B. D.; Moore, R. B.; Long, T. E. *Journal of Polymer Science, Part A: Polymer Chemistry* **2011**, 50(1), 166-173.
5. Hemp, S. T.; Allen, M. H.; Green, M. D.; Long, T. E. *Biomacromolecules* **2011**, 13 (1), 231-238.
6. Green, M. D.; Schreiner, C.; Long, T. E. *Journal of Physical Chemistry A* **2011**, 115(47), 13829-13835.

National Chemistry Week 2013 (Oct 20-26)

The theme of this year's National Chemistry Week is "Energy: Now and Forever!" This celebration will explore the positive impact of chemistry as it relates to energy. The mission of NCW is to reach the public, particularly students, with positive messages about chemistry and to provide a means of life. The Virginia Blue Ridge section again is participating in the K-12 poetry contest. Participants are encouraged to illustrate their poems related to chemical applications of energy. Please send the entries to Kim Lane, Radford University, 801 East Main St., Radford, Virginia 24142 or bring them to the October meeting. The deadline for receipt of entries is 6:02 p.m., October 23.

Gene Wise Award Nominees Sought—Due by Oct 14, 2013.

The Blue Ridge Section is seeking nominations for the Gene Wise Award. The awardee will be the speaker at Blue Ridge Section meeting in November at VMI.

The Gene Wise award for meritorious service to both chemistry and society by a member of the section was instituted in 1988. This award was created in recognition of the service to which Gene Wise dedicated himself throughout his career.

The purpose of this award is to discover and recognize professionals in our section who have dedicated their careers to the advancement of the chemical sciences while at the same time giving generous and unselfish effort in community service. You are invited and encouraged to nominate worthy recipients for the 2013 Gene Wise Award. Nominations should be sent to Anita Curze, Chemistry Department, Virginia Military Institute, Lexington, Virginia 24450-0304, or electronically to CruzeAF@vmi.edu and be received no later than 14 October, 2013.

Elections, Blue Ridge Section, ACS, for 2014

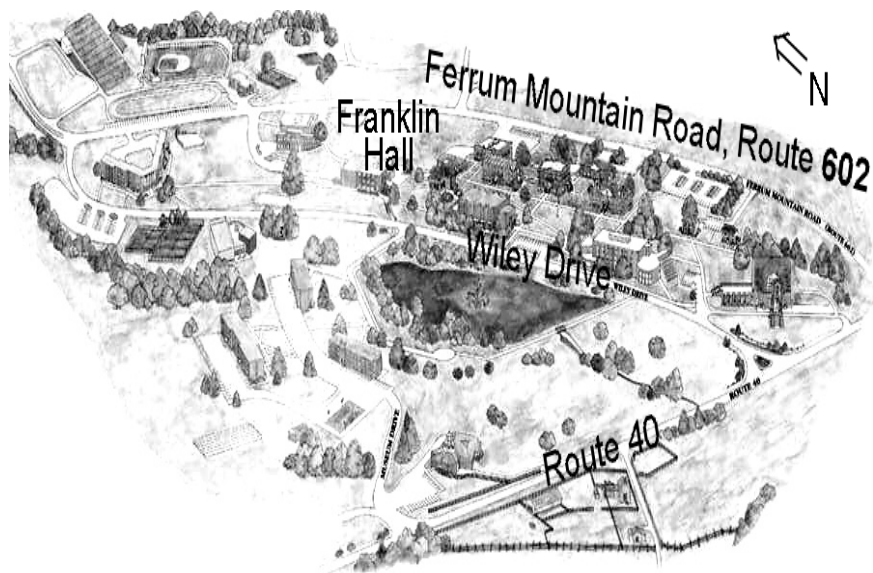
The Nominating Committee has prepared the following slate of nominees for the election at the November meeting. All have agreed to serve if elected. Other nominees will be accepted from the floor at that meeting. If you would like to nominate someone, please check with that person about his or her willingness to serve. You may also self-nominate.

Chair: Maria Puccio, Ferrum College
 Chair Elect: Tim Fuhrer, Radford University
 Secretary: Jim Ciszewski, Institute for Advanced Learning & Research
 Treasurer: Chris Monceaux, Radford University
 Newsletter Editor: Nancy Richardson, Liberty University
 Councilor: Gary Hollis, Roanoke College
 Alternate councilor Maria Puccio

Directions to Franklin Hall, Ferrum College

From I-81 take I-581 South which turns into Route 220 South. Stay on Route 220 through Boones Mill to Rocky Mount. Take the second Rocky Mount exit to Route 40 West. Ferrum is 10 miles beyond Rocky Mount on Route 40 West. Pass Ferrum Mountain Road (Route 602) on your right, then take the next right into the college's main entrance. You will pass Garber Hall (with the greenhouse) on the right, then Stanley Library and Schoolfield Hall. The next building on the right is Franklin Hall, and parking is available below Franklin Hall across from the Fitness Center. The Blue Ridge Mountain Room is located on the upper level of Franklin Hall.

Map of Ferrum College



Non-Prof. Org.
U.S. Postage
PAID
Lynchburg, VA 24502
Permit No. 493

1B3005

c/o Nancy Richardson , Editor
for VA Blue Ridge Section, American Chemical Soc.
Department of Biology and Chemistry
Liberty University
1971 University Blvd
Lynchburg, VA 24515

Return Service Requested

The November meeting will be held at VMI on Tuesday November 19. The speaker will be the Gene Wise Awardee.