

EDUCATION COMMITTEE
Submitted by Marietta Schwartz, Chair
2012 Report

Education Committee Members

Marietta Schwartz, Chair	Undergraduate Programs
Stephen Lantos	High School Subcommittee Chair
Morton Hoffman	Professor Emeritus of Chemistry, Boston University
Ruth Tanner	University of Massachusetts Lowell

The Education Committee supports and promotes academic program activities that showcase chemical education and young chemists at both the high school and college/university levels. Through announcements at the monthly meetings of the Section, in *The Nucleus*, and via mailings and email, information is provided to the membership in order to foster a greater interest in chemical education and to develop a responsible professional outlook toward chemistry among young scientists.

The Chair of the Education Committee, Marietta Schwartz, is a chemistry faculty member at the University of Massachusetts Boston. The Chair of the High School Subcommittee, Stephen Lantos, is a chemistry faculty member at Brookline (MA) High School.

James Flack Norris/Theodore William Richards Undergraduate Summer Research Scholarships.
(Edwin Jahngen, University of Massachusetts Lowell, Chair).

The Northeastern Section of the American Chemical Society (NESACS) established the James Flack Norris and Theodore William Richards Undergraduate Summer Scholarships to honor the memories of Professors Norris and Richards by promoting research interactions between undergraduate students and faculty. Research awards of \$3500 were given for the summer of 2012. The student stipend is \$3000 for a minimum commitment of ten weeks of full-time research work. The remaining \$500 of the award goes to the research advisor to use on supplies, travel, and other items relevant to the student project.

The 2012 scholarships were awarded to:

- Ka (Dennis) Cheng (Advisor, Kian L. Tan), Boston College
- Allister McGuire (Advisor, Charles Sykes), Tufts University
- Matthew Mower (Advisor, Charles K. Zercher), University of New Hampshire
- Shoshana Bachman (Advisor, David Haines), Wellesley College

Award winners were required to submit a report of their summer projects by November 2012 for publication in *The Nucleus*. They are also required to participate in the Northeast Student Chemistry Research Conference (NSCRC) in May 2013.

The scholarships were publicized through *The Nucleus*, the NESACS Web site, and mailings of applications and descriptive material to the chairs of the Departments of Chemistry, Biochemistry, and Chemical Engineering at colleges and universities in the Section. Applications included student

transcripts, descriptions of the proposed research, and two letters of recommendation. The awards enabled the students to spend the summer of 2012 engaged in research at their home institutions.

Eleventh Undergraduate Symposium on Sustainability and the Environment. Cosponsored by the Education Committee of the Northeastern Section ACS et al., and Coordinated by Edward Brush et al from Bridgewater (MA) State College (BSC).

The Education Committee of NESACS co-sponsors the yearly New England Undergraduate Symposium on Sustainability and the Environment held at Bridgewater State College. The symposium focuses on undergraduate and graduate research projects, with a special emphasis on environmental issues of particular concern to Southeastern Massachusetts. This Symposium provides an annual forum for discussion of environmental research conducted by undergraduate students in the New England region, and has opened doors to potential research collaborations among the participants.

On Saturday, December 1, 2012, the 11th Annual Undergraduate Symposium on Sustainability and the Environment was held in the new Conant Science and Math Center at Bridgewater State University. The Symposium ran from 9:00 AM to 2:30 PM and featured 37 poster presentations from undergraduate researchers, and over 100 students, faculty and guests representing public and private colleges and universities in New England. The Symposium was officially opened by Dr. Arthur Goldstein, Dean of the BSU College of Science and Mathematics. Dr. Goldstein praised the students for their work confronting urgent environmental issues, and fashioning acceptable and effective solutions. He congratulated the students on their sophisticated and intelligent work, and also expressed his thanks to the many faculty mentors in attendance for providing guidance and support.

The theme of the 2012 Symposium was, "Human and Environmental Health." The formal program began at 9:30 AM with a presentation by Dr. Joshua Hamilton, Ph.D., Senior Scientist and Chief Academic and Scientific Officer, The Josephine Bay Paul Center For Comparative Molecular Biology and Evolution, The Marine Biological Laboratory - Woods Hole. Dr. Hamilton's talk was entitled "Arsenic: Number One Environmental Health Threat" (<http://jbpc.mbl.edu/labs-jhamilton.html>). Dr. Hamilton's presentation was very well received by the undergraduate audience, and elicited a lengthy and energetic discussion on numerous topics surrounding environmental and public health issues that focus on what is believed to be the "worst chemical in the world".

The poster sessions began immediately following the presentation, running from 10:45 – 2:15. Attendees were treated to a continental breakfast and a deli platter for lunch.

The complete program with all presenters, titles and abstracts can be accessed from the symposium web page: <http://www.bridgew.edu/Environmental/>

SPONSORS

- Bridgewater State University Office of Undergraduate Research, Center for Sustainability, and Dean of the College of Science and Mathematics
- CONNECT Southeastern Massachusetts
- Northeastern Section of the American Chemical Society

The Northeast Student Chemistry Research Conference. Sponsored by the Education Committee of the Northeastern Section ACS and the Younger Chemists Committee of the Northeastern Section

This year's event was sponsored by Northeastern University and was a resounding success. The event took place on April 28, 2012 at Northeastern University's Curry Student Center and Hurtig Hall. There were >70 abstracts submitted, 10 of which were chosen for oral presentations, and >100 registrants. Sponsorship was provided from Northeastern University, Strem Chemicals, The Conditas Group and the Graduate Women in Sciences Boston Chapter.

There were six sponsored presentations prizes awarded at the NSCRC. The winning presentations are listed below.

Oral Presentation Awards

Outstanding Oral Presentation Award (sponsored by Strem Chemicals):

Nicholas DeLateur - *Northeastern University*

"Investigating Single Layer Versus Multi-Layer Active Sites with Alkaline Phosphatase"

Excellent Oral Presentation Award (sponsored by The Conditas Group):

Chris Theile - *Boston College*

"Synthesis of Ring Expanded Cyclo-deoxyuridine and Deoxyadenosine"

Poster Presentation Awards

Excellent Poster Presentation by a Graduate Student Award (sponsored by Strem Chemicals):

Colin J. Murphy, *Tufts University*

"Elucidating the rotation of a single surface bound molecule with a view of developing a synthetic molecular motor"

Excellent Poster Presentation by an Undergraduate Student Award (sponsored by The Conditas Group):

Shoshana Bachman, *Wellesley College*

"Stereospecific electrophilic addition of amidoaldehydes to oxazoles using Lewis acid catalysts"

Graduate Women in Science Award (sponsored by GWC, Alpha Omega Chapter)

Excellent Poster Presentation by a Female Presenter:

Anna Levina, *MIT*

"Palladium-Catalyzed β -Hydride Elimination Reactions of Alkyl Bromides and Tosylates Leading to Terminal Alkenes"

Phyllis A. Brauner Memorial Book Award

Allen Shih – *Harvard University*

"Supercharged Protein as a Vehicle for Therapeutic Protein Delivery"

*Dr. Phyllis Brauner received a PhD in Analytical Chemistry from Boston University and was a Distinguished Alumnae. She was a faculty member at Simmons College for 34 years while at the same time making significant contributions to NESACS thru the many committees she served on, including

serving as the Chair of the Board of Directors. She had a fascination with nature and had a passion to pass on that fascination thru chemistry to young people. She inspired her students to love chemistry and to recognize their special role as chemists in society.

Grants -in -Aid to Undergraduates

The Education Committee awarded Grants-in-Aid of \$350 to four undergraduates from colleges and universities within the Northeastern Section to enable the students to attend the ACS National Meeting in New Orleans, Louisiana, to present a paper at the Undergraduate Research Poster Session in the Division of Chemical Education. Matching funds have been committed by the institution to support the student's travel. The recipient is also required to participate in the Northeast Student Chemistry Research Conference (NSCRC) in April/May 2013.

The awardees, research supervisors, and the titles of the papers are as follows:

- Lauren Gagnon, Emmanuel College (Prof. Faina Ryvkin), *Size Controlled Synthesis of Quantum Dots for Biological and Chemical Detection.*
- Stephanie Murray, Stonehill College (Prof. Leon Tilley), *Improved Preparation of 4-acetylamino-2,2,6,6-tetramethylpiperidine-1-oxoammonium tetrafluoroborate and Exploration of Use for Dehydrogenation of Ketones.*
- Casey Brodsky, Boston College (Prof. Frank Tsung), *Pd@Rh Core-Shell Nanostructures for Electrochemical Energy Storage.*
- Bria Pelletier, Gordon College (Prof. Joel Boyd), *The Determination of the Optimal Crosslink Density for the Durability of Acrylic-Titania Composite Photocatalytic Support Materials.*

Applications for the travel stipend are accepted from students majoring in chemistry, biochemistry, chemical engineering, or molecular biology who are in good standing with at least junior status, and are currently engaged in undergraduate research. Abstracts for the Undergraduate Research Poster Session were required to be submitted by electronic transmission to the ACS National Headquarters by October 15, 2012 (11:59 pm EST).

Connections To Chemistry (Marietta Schwartz, Chair)

Program Conference Committee

- Marietta Schwartz, Chair, Education Committee, NESACS; University of Massachusetts Boston
- Ruth Tanner, Program Chair, NESACS; University of Massachusetts Lowell
- Mort Hoffman, Board of Directors, NESACS; Professor Emeritus, Boston University

Planning and Program Associates

- Christine Jaworek-Lopes, Chair, National Chemistry Week, NESACS; Emmanuel College
- Peter Nassiff, Head, Science Division, Burlington High School

Material Assistance

- Anna Singer, Secretary, NESACS
- Robin Giroux, Assistant Managing Editor, C&E News, for *Chemical & Engineering News*

- Marjorie Rawle Jones, Manager, Printing & Distribution, ACS Publications, for *Journal of Chemical Education*
- Krystal Cannon, ACS Office of Society Services, for *ChemMatters*
- Staff at Burlington High School

Publicity Support

- New England Association of Chemistry Teachers (NEACT)
- Northeastern Section of the American Chemical Society (NESACS)
- The Nucleus (NESACS)

On Thursday, October 18th, 2012, NESACS sponsored ***Connections to Chemistry***, a unique program to connect high school chemistry teachers to the educational resources of the ACS and to the members of the Northeastern Section. This is the thirteenth year for the program. Hosted by Burlington High School (Burlington, MA), the program drew over 50 teachers from high schools across New England.

The participants were welcomed by Marietta Schwartz, Connections Program Chair and Chair of the NESACS Education Committee, and by Peter Nassiff, Head of the Science Department at Burlington High School.

Each registrant participated in two of four different workshops which included presentations on “Using a Smartpen in Your Classroom: Inexpensive Technology with Positive Impact on Student Learning” (given by Mr. Alan Crosby, Newton South High School), a National Chemistry Week themed workshop on “Nano in the Museum: Opportunities and Resources for Chemistry Educators” (presented by David Sittenfeld and Karine Thate of the Boston Museum of Science), another National Chemistry Week themed workshop on “There's Plenty of Room at the Bottom: Nanotechnology” (offered by Dr. Frank Tsung and students, Boston College) and a workshop on “Chemagination!” (given by Dr. Randy Weitraub and Dr. Barbara Ameer). Over 50 registrants attended.

Following the workshops and dinner (highlighted by the traditional baked apples with caramel sauce), the keynote address was given by Dr. Robert Langer, Department of Chemical Engineering, MIT. His talk, entitled “Biomaterials and biotechnology: From the discovery of the first angiogenesis inhibitors to the development of controlled drug delivery systems and the foundation of tissue engineering” gave an overview of his work in chemical engineering as applied to medical problems, including biodegradable polymers and tissue engineering. His address was followed by the traditional raffle of American Chemical Society items.

To conclude the program, participants were given a certificate awarding professional development credits and a year's subscription to *ChemMatters*, an award-winning magazine for high school chemistry, published by the ACS. Participants also received copies of the *Journal of Chemical Education*, *Chemical & Engineering News*, and *The Nucleus*.

ACS SCHOLARS PROGRAM

This is the twelfth year for the involvement of the NESACS in the ACS Scholars Program. NESACS directly sponsors one ACS Scholar: Elsy Naveo (Suffolk University). In the 2012-2013 academic year, 18 Scholars were/are studying within NESACS:

First Name	Last Name	College
Melanie	Adams	Massachusetts Institute of Technology
Babajide	Akinronbi	Massachusetts Institute of Technology
Jenifer	Brown	Harvard University
Kevin	Erazo	Massachusetts Institute of Technology
Kayla	Harris	Massachusetts Institute of Technology
Ayolah	Ibezim	Boston University
Courtney	Johnson	Northeastern University
Alejandro	Krauskopf	Massachusetts Institute of Technology
Aisha	Lee	Harvard University
Manuel	Morone	Harvard University
Alyssa	Napier	Massachusetts Institute of Technology
Elsy	Naveo	Suffolk University
Michele	Pacheco	Northeastern University
Jacqueline	Salas	Regis College
Paul	Schwein	Massachusetts Institute of Technology
Jacqueline	Thompson	Massachusetts Institute of Technology
Chika	Ugboh	Massachusetts Institute of Technology
Arica	Wyche	Massachusetts Institute of Technology

In continuing efforts to build connections with the ACS Scholars in the NESACS area, all of these Scholars are contacted by e-mail monthly from September to May, and informed of NESACS activities of interest to undergraduates. In particular, they were invited to attend the monthly meetings of the Section, and to be its guests at the social hours and dinners that preceded the invited speakers. The additional advantages are for the Scholars to meet each other and to encourage them to think about ways for the Section to help them achieve their academic and career goals. They also were put on the mailing list to receive *The Nucleus*.

National Recognition for NESACS Student Chapters

The ACS Committee on Education has selected the following student chapters in the Northeastern Section to receive special recognition for the programs and activities described in their 2011-2012 reports:

Outstanding

- Gordon College, Wenham, MA; Benjamin Stewart and Bria Pelletier, chapter co-presidents; Prof. Joel Boyd, faculty advisor.
- Northeastern University, Boston, MA; Christine Dunne and Elise Miner, chapter co-presidents; Prof. Kathleen Cameron, faculty advisor.

Commendable Recognition

- Suffolk University, Boston, MA; Stephanie Laurer and Meaghan Sebeika, chapter co-presidents; Prof. Doris Lewis and Prof. Andrew Dutton, faculty advisors.

Honorable Mention

- Stonehill College, North Easton, MA; Katherine O'Toole and Meghan Harley, chapter co-presidents; Profs. Cheryl Schnitzer and Marilena Hall, faculty advisors.

Student involvement in applying green chemistry principles and practices is essential to the integration of environmentally benign technologies in academia and industry. The ACS Green Chemistry Institute recognizes ACS student chapters that have engaged in at least three green chemistry activities during the academic year. Listed below are the 2011-2012 Green Chemistry Award recipients located within the Northeastern Section.

- Gordon College, Wenham, MA
- Northeastern University, Boston, MA
- Suffolk University, Boston, MA

All chapters receiving special recognition will be honored at the 245th ACS National Chemistry Meeting in New Orleans, LA, on Sunday, April 7, 2013.

For the 2012-2013 academic year, the ACS Society Committee on Education has selected 15 Community Interactions Grant proposals to receive funding. Listed below is the recipient located within the Northeastern Section.

- Boston College, Chestnut Hill, MA; Douglas Brown, student project director; Prof. Eranthie Weerapana, faculty advisor, for "Chemistry in Action", \$272.85.

(All information and award descriptions from "inChemistry" magazine, November/December 2012 issue.)

YCC/NESACS–JCF/GDCh German Exchange (Michael Strem, *Strem Chemicals*, Chair, Ruth Tanner, Morton Hoffman, and YCC Members).

During the week of March 17th, 2012, ten graduate and undergraduate students traveled from Boston, MA to Rostock, Germany for the 10th annual YCC-NESACS/JCF-GDCh Exchange program.

After a long journey the students arrived in the Hanseatic city of Rostock, Germany for the 14th annual Frühjahrssymposium. After registration they were quickly whisked off to the seaside town of Warnemünde, followed by the conference reception. Over the following three days, eight students presented poster presentations and two gave oral presentations. Our very own Gowri Chellappan won a third place poster presentation award. Throughout the conference students were immersed in a variety of scientific talks and cultural outings. These activities gave them the opportunity to learn more about the rich history of Rostock and socialize with the German students. Conference organizers set up a Rostock city tour by night and conference party to ensure that. The conference ended with a talk by Professor Albert Koch on the "15 years of JCF" and a dinner, ending with fireworks.

Following the conference students were treated to tours of the University of Rostock Leibniz-Institut für Katalyse. There students spoke one-on-one with other graduate students and toured their laboratory areas. In addition, Professor Flint give an experimental lecture outlining his work in developing programs for teaching chemistry in secondary schools that entice young students into the STEM fields. By bus, the students also toured Kraftwerk, a coal powerplant, and Nordex, a wind turbine factory. This showcased two distinctly different energy sources available in Germany.

On the final day of the German exchange trip, students toured a shipbuilding museum and explored the Rostock Easter market. The farewell dinner was held at Amberg13, where members of the GDCh, JCF, and University of Rostock sat down for a final meal together. Both sides shared their appreciation for the exchange and each other. Of particular note were the efforts of Elisabeth Kapatsina of the GDCh.

Each student that participated in the exchange kept a journal of their experience, two of which were published in the Nucleus. In addition, many of the students keep in touch with their German hosts via email and social networking outlets.

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High School Subcommittee

Stephen Lantos, Committee Chair

Avery A. Ashdown High School Chemistry Examination Contest (Committee: Steve Lantos, Chair; Peter Nassiff

The High School Committee continues to oversee the two competitive chemistry examinations offered to section secondary students: The Avery Ashdown Exam (42nd year) and the United States National Chemistry Olympiad (USNCO, 28th year). Last year for the Ashdown Exam we had a total of 156 students register and 142 student participate from 32 area schools at Simmons College the first Saturday in April, 2012. This was again a record number of participants in the past decade, with a significant increase in the numbers attending from NH schools (public and private). We hope this number continues to increase!

The first place winner received the Simmons College Award of \$500 from the Chemistry Department at Simmons College (MA). This award was presented by a representative of their Chemistry Department, Dr. Michael Berger. For the additional awards, \$250 is given for the second place, \$100 for the third place, \$75 for the fourth place, and \$50 for the fifth place. In the event of ties, these amounts are divided among the tied scorers.

United States National Chemistry Olympiad Team (Section Coordinator: Steve Lantos)

For the USNCO, the ACS offered the Northeastern Section 25 seats for this annual nation exam. We had 25 students participate ranging from ages 11-18. Unfortunately, we did not have a student this year selected to attend the two-week study camp in Colorado Springs to prepare for the International

Chemistry Olympiad (IChO), but hope for representation from NESACS at this level of competition this upcoming year. We look forward to this year's strong participation and competition in the high school chemistry examinations!

Lyman C. Newell Grants (In conjunction with the New England Association of Chemistry Teachers)

The Lyman C. Newell Grants provide financial assistance to high school teachers in the geographical area of the Northeastern Section of the ACS to subsidize the cost of attending the annual summer conference sponsored by New England Association of Chemistry Teachers (NEACT). The grants are administered by the Newell Grants Committee. The Committee administers the grant process starting with the publicity to the awarding of the grants. The Committee coordinates its activities with the Chair of the Education Committee and in consultation with the President of NEACT.

One applicant was selected to receive a Newell Grant: Rick Linden of RHAM High School (Regional Hebron, Andover, and Marlborough) regional high school in Hebron, CT.

The Lyman C. Newell Grants commemorate a former chair of the Northeastern Section who was a distinguished chemist, teacher, and historian of chemistry. For many years he was chair of the Chemistry Department at Boston University. Lyman Newell served as the first president of NEACT from 1889 to 1900 and expressed a continuing interest in training chemistry students throughout his long career. His efforts are celebrated by the grants that bear his name.

Aula Laudis Society: Harvey Gendreau, Committee Chair

The Aula Laudis Society recognizes outstanding High School Chemistry Teachers from within the Section. The teachers who were chosen to be honored by the Society are:

Jeff Bigler	Lynn English High School
Betty Iannuccilli	Andover High School
Parul Kumar	Lexington High School
Ann Lambert	King Phillip High School

Theodore William Richards Award (Steve Lantos, Chair with NESACS Awards Committee)

The Theodore William Richards Award for Excellence in Teaching Secondary School Chemistry is intended to honor a teacher in the Northeastern Section who, through innovation and dedication, has inspired potential chemists, has communicated chemistry to non-chemists, or has influenced other teachers of chemistry. The selected teacher is officially honored at the section's May meeting ("Education Night") and receives both a \$1,500 prize and a Certificate of Recognition.

Ann Wolf	Plymouth South High School
Kathleen Markiewicz	Boston Latin School

Anyone, including a prospective awardee, may make a nomination. Colleagues, department heads, principals, students, and former students are urged to consider the criteria upon which the Section will base its selection and to submit the name of a deserving individual. The criteria for excellence

correspond broadly to the effectiveness with which the teacher conveys the principles of chemistry to students and to the influence that the teacher has had on students and on other teachers.

This award is typically given annually to an outstanding teacher in the section who has shown lifelong dedication to the craft of chemistry education and has been an active contributor to the Section.