

Nu

HUSKY

Chemist



Aug. 06

Hiring Blitz: Five New Faculty Join Department

The University's \$75 million academic investment plan has resulted in five faculty hires this year in Chemistry & Chemical Biology, bringing the total number of professors to 25—an increase of 25%! Those joining us this calendar year will bring a wide range of expertise, strong funded research programs, and will contribute to the University's initiatives in nanotechnology and biotechnology. Professor Max Diem (physical and biophysical chemistry, bio-imaging) settled into his new laboratory during the Spring 2006 semester. Arriving summer and fall 2006 will be:



The five new members of the faculty: (l to r) Penny Beuning, Eugene Smotkin, Max Diem, John Engen, Zhaohui Sunny Zhou

- Penny Beuning (chemical biology and biotechnology) following a postdoc at MIT

- Eugene Smotkin (physical/materials chemistry, applied electrochemistry) from The University of Puerto Rico
- John Engen (bioanalytical chemistry and mass spectrometry), from The University of New Mexico
- Zhaohui Sunny Zhou (bioanalytical, bioorganic chemistry) from Washington State University.

Welcome to all!

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Hanson Named Matthews Distinguished Professor

Professor Robert Hanson received the honor of being named Matthews University Distinguished Professor this spring. Named for Board of Trustees Chairman Emeritus George Matthews and his wife, Kathleen Waters Matthews, the Matthews Distinguished University Professorship recognizes one professor each year for distinguished accomplishments in research, scholarship and teaching. Congratulations on this achievement, Bob!



The 2005-6 academic year has been an incredible year for the department, and will be a defining period we point to in years to come. We have grown our student body, completed a major faculty hiring program, swelled our research funding base and modernized our facilities. There is much to celebrate and many to congratulate for their efforts and hard work. Thanks to this, the department has grown into one of the leading academic units on campus, and it is a true pleasure to serve as its chair.

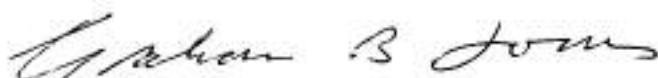
When the University announced its \$75 million academic investment plan in 2003, there was a feeling of optimism that the department could benefit through faculty hires. Who would have thought, however, that in 2006 alone, five new faculty hires would be completed in our department. These research stars (see p.1) will promote our visibility on the international stage and help us take leadership roles in campus-wide interdisciplinary research efforts. Coupled with the opening of the Center for Drug Discovery in Hurtig Hall (see Husky Chemist 2005), this brings the total invested in the department through the hiring initiative to over \$10 million. Around Hurtig Hall you can see the fruits of these investments, with laboratories and offices on each floor being renovated and modernized. Clearly the University administration sees the department as a cornerstone of its research and teaching mission looking to the future, and we can now capitalize on this momentum to reach new heights.

The blueprint for the department's future was outlined in a 5-year plan drafted in 2003. One of the principal goals was to resource and develop the undergraduate chemistry major, to reach a steady state of 100 students by 2008. I am delighted to say that we have already exceeded this goal with the recruitment of this fall's entering class. This is a phenomenal accomplishment and rewards the effort of so many who have helped with curricular reform, the marketing campaign and our open houses. To increase enrollments while simultaneously raising the entering SAT/GPA of our students speaks highly of our academic program. We clearly have become a destination of choice for prospective students, and our yield rate (those who choose to come to our department from those offered a place) is one of the highest in the University. We have built an environment for our majors which is unrivalled across campus, and success breeds success. Having a large population of talented chemistry majors has attracted the attention of the local pharmaceutical and biotechnology sector. Merck Research Laboratories established a multi-year scholarship program which will enter its third year, and AstraZeneca recently made a \$100,000 gift to the department — one of the largest unrestricted corporate gifts to an academic unit.

Given the influx of so many new research groups to Hurtig, we have also bolstered our graduate recruiting efforts. Marketing our new graduate curriculum and co-op PhD program has been very effective, and our open houses filled with eager prospective entrants. Fall 2006 we will welcome a record number of new graduate students (24) which will bring our population to nearly 80. Strengthening of graduate programs in the sciences and engineering is one of the core missions of the University, and we are now regarded as a campus leader. Our faculty research programs are clearly attractive to high-caliber students, and our impressive graduation and job placement rates speak volumes about us. This past year over a dozen chemistry PhD's were awarded, one of the highest numbers in the University.

The much-touted role of chemistry as the 'central' science has become a reality at Northeastern. We have grown as a unit, increased enrollments in our programs, and attracted funding per faculty member at one of the highest levels on campus. Colleagues are contributing substantively to our mission through hard work and dedication. Last year we taught 14,000 semester hours of undergraduate classes and 920 hours of graduate classes, up by over 25% from 2003. We were even honored with an award from the graduate school for the highest enrollment increases in the college!

The 2006-7 academic year will soon be here. Our future is bright, and our successes of the past years will propel us forward. It's a great time to be a Husky Chemist.



Graham Jones



Photo: Craig Bailey

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School of Technological Entrepreneurship Opens



l to r: Harry Keegan, III, Graham Jones, Paul Zavracky, Janet Wolfe, Jill Panetta, ACS Officers Amy Kallmerten and Micki Miskiv

To introduce chemistry majors to the technological entrepreneurship minor offered through the new School of Technological Entrepreneurship (STE), the Department of Chemistry & Chemical Biology hosted a mini-symposium, "Entrepreneurship for Chemists," on April 4. The symposium featured entrepreneurs Jill Panetta, Ph.D., CSO of InnoCentive, [NU B.S. Chemistry, '75], Janet Wolfe, Ph.D., President of Wolfe Laboratories, Harry Keegan, III, MBA, President and CEO of Braintree Laboratories, Inc. [NU BS/BA, '64] and STE Dean, Paul Zavracky, Ph.D.

Dean Zavracky, who has 30 years of experience in the management of successful venture funded companies, presented an overview of the program and the field of technological entrepreneurship which lies at the intersection of science and engineering, and business administration. He explained that the new minor (which requires a total of 5 courses) will enable students to acquire skills in a formal program whereas, in the past, entrepreneurial scientists primarily learned about business practices on the job.

Panetta, Wolfe and Keegan spoke of the creation, development, challenges and successes of their respective companies, giving students an opportunity to hear about an array of unique approaches and styles. Students engaged in a lively question/answer session that carried over into informal discussions after the event, including talk of potential co-op placements at the local companies.



Chemistry & Chemical Biology Faculty Statistics 2005-6

- Taught 14,000 semester hours of undergraduate classes
- Taught 920 hours of graduate classes
- Annualized grant holding > \$5 million
- Total grant holding > \$15 million
- Submitted proposals totaling in excess of \$24 million
- Produced 54 articles in refereed journals, 93 presentations and 4 patents
- Supported 66 graduate students and 19 research fellows

New Courses to Launch Spring 2007

Biophysical Chemistry-CHM U421

The rapid advance of biotechnology has spawned a wide array of new physical methods for examining living systems at the molecular level. There is an increasing need for students and researchers to understand the physical basis of the latest technology so they can choose appropriate tools and make optimal use of them. Although several graduate-level courses related to biophysical chemistry topics are now available at Northeastern, there is a great demand to educate undergraduates in advanced biophysical methods to keep pace with their co-op research experiences in the biotechnology industry. Chemistry, which is ideally positioned at the interface between molecular physics and molecular biology, is well suited to address this need with a new course in the undergraduate curriculum, **Biophysical Chemistry, CHM U421**, which will commence Spring, 2007.

The curriculum will cover contemporary methods for characterizing the structure and dynamics of biomolecules, including fluorescence, scanning probe microscopy, X-ray crystallography, protein folding, sedimentation, electrophoresis, and microfluidics. The study of biochemical energetics and dynamics will be reinforced by laboratory exercises in molecular modeling. Students will gain a basis for understanding and exploring current physical tools used in biotechnology, as well as developing basic skills in manipulating and presenting biological molecules graphically.

Course developer **Professor David Budil** believes this course will address students' demands for advanced electives in Chemistry that will better prepare them for co-ops and allow them to further investigate career options. Additionally, coursework in biophysical methods will provide potential employers with better-trained graduates, as the students will not only acquire analytical skills essential for biochemistry and related fields, but will also develop crucial critical thinking skills. The course strives to stay current with students' and employers' requirements and capitalize on the public interest in bio- and nano-technology.

Recent Advances in Nano-Materials: Understanding Physical Chemistry of Nano-Scale Interactions – CHM G247

A new graduate course in nano-materials has been developed by **Professor Sanjeev Mukerjee**. The objective of CHM G247 is to provide an overview of recent advances in nano-materials from the perspective of (a) classification (b) characterization and structure property relationships and (c) synthesis and design of tailor made materials to meet future technological needs. While the course is designed from a chemistry perspective, contributions from diverse communities such as physics is well represented, both in the sections dealing with structure property relationships, as well as from the point of view of contributions made in the development of theory and practice of spectroscopic methods. The new course is offered Spring 2007 and will also form an integral part of the IGERT Nanomedicine program.

Faculty Update 2006



Professor **Penny Beuning** joins the department in July. She will pursue her research interests in the molecular mechanisms of DNA damage tolerance. Outside of her academic program, Penny serves as president of the Boston Chapter of Graduate Women in Science, a post she has held since 2002.



Professor **Bill Giessen** has left the position of Associate Director of the Barnett Institute to devote more effort to his group's sponsored interdisciplinary research program on chemometrics-based statistical analysis of markets. Two doctoral graduates of the program now hold positions in the financial service industries in Boston and NYC.



Professor **David Budil** was granted an IDEA award from the DoD for a project on spin-labeling technology in collaboration with Prof. Robert Hanson. David also spearheaded the development of a new course in the physical chemistry curriculum and continues to serve as head advisor to biochem majors.



Professor **Thomas R. Gilbert** will serve as Director and Acting Dean of the School of Education in 2006-07. Tom will continue as advisor to our award winning ACS Student Affiliates chapter. At the National Meeting of the ACS in Atlanta, the group received an Honorable Mention award for activities during 2004-2005.



Professor **Geoffrey Davies**, with Dr. Elham Ghabbour, continued their active research program in humic substances, involving numerous undergraduate researchers. The group hosted the annual international Humic Substances Science & Technology Conference IX this spring and presented its work at several conferences.



Professor **William Hancock** was honored by being elected President of the US Human Proteome Organization (US HUPRO). Bill's research group continues to grow, and active collaborations with a growing number of biotechnology companies have been established as well as NCI studies on the search for biomarkers for cancer.



With his lab now established and his research program underway, Professor **Max Diem** is engaged in modernizing the physical chemistry curriculum and developing formal ties with campus-wide and external research institutes.



Receiving the honor of Matthews Distinguished Professor this spring, Professor **Robert Hanson** has expanded his medicinal chemistry research program with active collaborations with CenSSIS, the School of Pharmacy, and the IGERT program in nanomedicine. Bob was also a recipient of a highly competitive Susan G. Komen Foundation research grant.



John Engen's arrival on campus is slated for August, and he will occupy the Waters Mass Spectrometry lab in the Mugar Building. Professor Engen recently co-organized the ASMS Sanibel Conference on hydrogen-deuterium exchange mass spectrometry.



Professor **Graham Jones** continued as Chairman of the University's Research Policy Oversight Committee (RPOC). A recent study co-authored by Graham on imaging agents selectively activated by prostate cancer antigens received national attention, cited in numerous journals and media bulletins.



As Graduate Coordinator, Professor **David Forsyth's** efforts have led to more than 25% annual growth in enrollments for graduate courses. David also oversaw this year's graduate recruiting drive which yielded a record number of new graduate students.



Director of the Barnett Institute, Professor **Barry Karger** has been elected to the Advisory Board of NU's School of Technological Entrepreneurship (STE). Barry's research group continued to receive recognition for their work on proteomics and biomarker identification, with a number of new clinical partnerships established.



Professor **Rein Kirss** continued as head advisor for the chemistry majors. With numbers now exceeding 100, and the initiation of the combined BS-MS degree platform, Rein is assisting the graduate school for implementation of best practice across the University.



Professor **Mary Jo Ondrechen** is an active principal investigator for the \$3.3 million IGERT program in nanomedicine. Mary had a busy schedule this year including presentations at the Pacificchem 2005 Conference in Hawaii and the Bioinfo 2006 Conference in Aarhus, Denmark.



Professor **Ira Krull** began a 2-year academic exchange program with Ben Gurion University in Israel, which will involve him teaching there full time in Spring 2007. Earlier in the year, Ira was honored by being elected as a Fellow of the Royal Society of Chemistry (RSC).



Professor **William Reiff** is relocating his research operation to the Marine Science Center in Nahant this fall. Bill had a busy invited lecture schedule in 2005-6, including presenting at the International Workshop on Nuclear Gamma Resonance (Mossbauer Effect) Spectroscopy meeting held in Seeheim, Germany this June.



Professor **Philip Le Quesne** has been selected to serve as the department's representative to the College Council. He continued to teach Advanced Organic Synthesis in the graduate program and Organic Chemistry 2 for our undergraduates. Phil also oversaw the department's colloquium program.



Professor **Eriks Rozners** chaired a symposium on Oligonucleotides and Therapeutic Applications at the ACS National meeting in Atlanta. Eriks also presented at the Gordon Conferences on Stereochemistry and Natural Products, and acted as a Discussion Leader at the Gordon Conference on Natural Products.



Professor **Pam Mabrouk** was appointed as Director of the Office of Undergraduate Scholarship, Creativity and Research (OSCaR). Pam is also the 2006 Chair of the Northeastern Section of the American Chemical Society and a Councilor of the ACS.



Professor **Eugene Smotkin** will be arriving on campus in September and officially starting in January 2007. In addition to establishing a fuel-cell research center, Gene will be engaged in developing formal ties between NU and the University of Puerto Rico.



Center for Drug Discovery Director, Professor **Alexandros Makriyannis**, welcomed the completion of the high field NMR laboratory in the Hurtig basement, equipped to carry out a variety of experiments in liquid and solid-state. The CDD is also equipped with 2 state-of-the-art mass spectrometers for research in proteomics and metabolomics.



Professor **Paul Vouros** expanded his portfolio of federal funded programs yet further, with two recent grants from NIH. Paul served on an NSF review panel and a study section panel for the NIMH.



Professor **Sanjeev Mukerjee** was promoted to the rank of Full Professor. Sanjeev continues to be a leader in the University's efforts in the area of fuel-related research, and hosted numerous distinguished visiting scientists in his laboratory this past year.



Professor **Philip Warner** continued to serve as liaison for our undergraduate chemistry laboratories. Phil will serve on the College's Tenure and Promotion Committee in the 2006-7 academic year.



Professor **Zhaohui Sunny Zhou** will be joining the department in January 2007 with lab space in Hurtig Hall. He will be bringing graduate students from Washington State University in the new year, and will be joined on his move to the Boston area by his wife, Leah, and son, Eddie.

New Hires

Professor John R. Engen

The department is pleased to welcome on board Professor John R. Engen, who will hold a joint appointment as Associate Professor in Chemistry & Chemical Biology and Faculty Fellow in the Barnett Institute upon his arrival August 2006. Professor Engen comes to Northeastern from the University of New Mexico in Albuquerque. He holds two BS degrees (molecular biology and biochemistry)



from Union College and a PhD in Chemistry from the University of Nebraska. He completed postdoctoral work at the EMBL in Heidelberg, Germany, and at Los Alamos National Laboratory. He is a Fellow of the European Molecular Biology Organization (EMBO).

Professor Engen has become a recognized expert in probing both inter- and intra-molecular interactions in proteins with hydrogen exchange (HX) and mass spec-

trometry (MS). He has published over 30 papers on the topic in recent years and given an equal number of invited lectures. He co-organized the 2006 Sanibel conference on studying proteins with HX MS and now leads an HX MS interest group for the American Society of Mass Spectrometry.

Proteins that are not amenable to mainstream structural techniques such as X-ray diffraction and NMR can be probed with Professor Engen's mass spectrometry methods. He is currently using these methods for the analysis of structural activation, viral protein binding and small molecule inhibition of oncogenic kinases. Several viral accessory proteins critical for infectivity and replication of HIV, SIV, and a strain of Herpesvirus are also under investigation.

Professor Engen will bring postdoctoral fellows and PhD students with him from New Mexico, supported by his NIH-funded program. He has vast experience teaching all manner of analytical and biochemistry courses, and his state-of-the-art protein mass spectrometry laboratory will add to the reputation and capabilities of the Department and Barnett Institute.

Professor Eugene Smotkin

We also are delighted to welcome Professor Eugene S. Smotkin from the University of Puerto Rico at Rio Piedras of San Juan, Puerto Rico, who will join us Spring, 2007. Prof. Smotkin will add an exciting dimension to our efforts in electrochemical science and engineering by broadening the fields of use of polymer electrolyte membrane reactors currently restricted to fuel cell applications. He received his BS degree at San Jose State University, CA, and his PhD, working with Professors Allen J. Bard and Marye Ann Fox, at the University of Texas at Austin.

Smotkin is author of 51 publications, holds seven US patents and has been funded for over 12 years by the Army Research Office and Department of Energy for his work on fuel cell catalysis.

Commenting on Smotkin's arrival, Vice Provost Malcolm Hill stated "His appointment will bring a new dimension to research both in the Department of Chemistry and Chemical Biology and across campus. This field is highly significant, tying basic research at Northeastern with a rapidly developing fuel cell community in the

State of Massachusetts, and is a major thrust area both for the Department of Energy and the Department of Defense. Professor Smotkin's research program will complement that conducted in Chemistry and Chemical Biology, Chemical Engineering, and in Physics, and provide visibility for the University at the international level."

Although his position officially starts Spring, 2007, Prof. Smotkin will be on campus at the start of the fall semester, 2006, and welcomes prospective students interested in conducting research in his laboratory. Prof. Smotkin will be joined by his wife, Linda.



C&CB Hosts Research Retreat:

Chemistry at the Interfaces of Science and Engineering

Recognizing that federal research funding is being channeled more and more towards interdisciplinary projects, the department recently sponsored a research retreat to discuss grant proposal strategies. The all day event, held at the Henderson House on May 26, was represented by all active research groups in the department and featured guest lectures by invited heads of campus research institutes. These included Sri Sridhar (Electronic Materials Research Institute), Michael Silevitch (CenSSIS), Mark Williams (CIRCS), Vladimir Torchilin (Center for Pharmaceutical Technology and Nanomedicine) and Kim Lewis (Antimicrobial Discovery Center). Following presentations, departmental faculty gave overviews of specific areas of expertise and then a focused discussion on specific RFP's

was initiated, hosted by Horst Wittman (Division of Research Development).

The event concluded with a research poster session and networking mixer, and has already resulted in development of a working group to submit an application for an NIH training grant.



Faculty Researchers Receive \$3.3 Million Nanomedicine Grant from NCI and NSF

Chemistry & Chemical Biology professors Mary Jo Ondrechen and Sanjeev Mukerjee are part of a team of researchers awarded a \$3.3 million grant by the National Cancer Institute (NCI), part of the National Institutes of Health (NIH), and by the National Science Foundation (NSF) to establish a new interdisciplinary doctoral education and research program in Nanomedical Science and Technology. This new doctoral program is part of the Integrative Graduate Education and Research Traineeship (IGERT) program of the NSF. Here at NU, multi-disciplinary faculty will work together to develop solutions to complex problems at the interface of nanotechnology, biotechnology and medicine. NU's program aims to educate the next generation of scientists and technologists with the requisite skills to address the scientific and engineering challenges of applying nanotechnology to human health, with the necessary business, ethical and global perspectives. Physicist Srinivas Sridhar is the Principal Investigator and Director of the program. The co-principal investigators along with Ondrechen and Mukerjee are Mansoor Amiji from Pharmaceutical Sciences and Gilda Barabino of Chemical Engineering. The project will also include collaborations with investigators from neighboring hospitals including the Dana-Farber Cancer Institute and the Massachusetts General Hospital, and also with scientists from companies such as Genzyme and Boston Scientific.

C & CB graduate students Heather Brodtkin and Adam Hendricks have received IGERT Traineeships in support of their doctoral education and dissertation research projects. Heather is working with Mary Jo Ondrechen and Mansoor Amiji on the project "Computationally Guided Protein-Specific Labeling with Nanoparticles." Adam's project, "Synthesis of Spin Labeled Nanosensors for the Estrogen Receptor," is directed by C&CB Professor Robert Hanson and is in collaboration with C&CB Professor David Budil and graduate student Stefano Gulla.



Heather Brodtkin and Adam Hendricks

Information about the new IGERT doctoral program in Nanomedicine is available at: <http://www.igert.neu.edu>.

Chair Honored by UK University

The University of Liverpool recently announced that it will award Professor and Chair Graham Jones the Doctor of Science degree (DSc). This is the highest research degree conferred by the University, and recommendations are based on lifetime contributions to science. The University cited Jones's work in medicinal chemistry for the award, referencing the more than 100 publications in the field to date. Lord Owen, Chancellor of the University, presented the award at a ceremony in July. Congratulations!

GSA News

We had a good year in the GSA, and had as our primary focus the goal of building a stronger chemistry community. To help with this, we included a representative from NUSAACS, Amy Kallmerten, in most of our event planning. I'd like to take a moment to give a big thanks to Amy for all her help. With a big helping hand from Brian Hult, we got our website up and running. You're all encouraged to visit it at www.chem.neu.edu/web/gsa. Thank you Brian. Jim Glick and Heather Brodtkin did an excellent job with the colloquium series, and deserve our congratulations. They arranged 20 seminars! It's an enormous job, and they did it beautifully.

We again visited Hyland Orchards during their Harvest Festival and also went snow tubing at Nashoba Valley. Both of these events were well-liked last year and again this year, though it seems the weather just never wants to cooperate with our snow tubing plans. We instituted the monthly movie night this year. Attendance has grown and I'm sure as more people submit their suggestions we'll attract an even larger audience. Our spring and fall barbeques have now

become a tradition, along with the holiday party and International Day. I'd like to be able to gloat once again about drubbing the faculty in soccer, but the match was postponed due to weather. Stefano Gulla, the new GSA President, will have those honors next year!

And lastly, with this year's end, I chose not to run for re-election but to allow some new faces to take over. The new group looks to be a very enthusiastic one, so I leave with great confidence that things are in good hands. I've really enjoyed working with everybody these last two years and wish to encourage people to become involved. We have a wonderful opportunity here, with an active GSA board and supportive department head in Professor Jones, to really bring the department together as a community, making it better and stronger.

Thank you all. Don't be strangers.

— Neil Jordan
2005-6 GSA President



(l to r) NUSAACS Faculty Advisor Tom Gilbert, Amy Kallmerten, Joelle Torregrossa, Brittany Rowland, Micki Miskiv and Nick Yankauskus with honorable mention award at the national ACS meeting in Atlanta.



Departmental Service and Graduate Student Awardees:
Back row: Ian Kendrick, Paul DiMilla, John Bottomy
Front row: Erin Shelnut, Danielle Falcone, Heather Brodtkin, Jim Glick, Graham Jones

GRADUATE STUDENT AWARDS 2005-6

Departmental Citizenship

Jim Glick
Heather Brodtkin

Excellence in Chemical Research

Daren Levin

Outstanding Teaching Assistants

Danielle Falcone
Ian Kendrick
Paul LaBeaume
Adam Hendricks
Erin Shelnut

UNDERGRADUATE AWARDS 2005-6

Outstanding Senior

Nicole Whitney

Al & Joy Viola Scholarship

Brittany Rowland
Nicholas Yankauskas
Zachary Robinson

Carole J. Urich Shapazian Scholars

Senior: Nicole Whitney
Junior: Joelle Torregrossa
Middler: Lauren Chapman
Sophomore: Greg Morehouse
Freshmen: Sarah Pileeki

Bernie Lemire Awards

Sarah Pileeki
Matthew Daniels
Zachary Robinson

Bachelor of Science (Chemistry)

Nicole Whitney
Hitomi Hasegawa
Hemal Patel
Krystina Valdes
Amanda Federici
Minjung Kim

Bachelor of Science (Biochemistry)

Daad Abraham
Deanna Acosta
Emily French
Kene Piasta
Ahmed Shareb
Darshan J. Kothari
Navina Mehta
Jason M. Parente
Robert Patterson
Ashley R. Penrose
Daniel C. Thrasher
Tara E. Tumulty

Doctor of Philosophy

Hsuan-Shen Chen
Robert S. Dilis
Daren Levin
Yiqing Lin

Yang Liu
Anna Pashkova
Elaine Marie Ricicki
Yonghui Wang
Wen Wen
Qun Xu
Ziping Yang
Jian Yao
Li Zang

Master of Science

Lei Cao
Tyler Dean Carlage
Madduma Dayarathna
Zina Larissa Dubowjy
Rebekah Joy Ekelund
Felix Epie
Digna Xiomara Fuentes
Yongli Gao
Adam Hall
Jiezhen Li
Qin Liu
Christian Martin
Karthikeyan Ramamoorthy
Samnang Tep
Li Yan
Yu Yang
Pingwei Yuan
Georgine Wajdi Zainoun

2005-6 GRADUATES

ACS Student Affiliate Chapter News

NUSAACS had a very productive and full year and looks to next year to continue to expand. We are now boasting around 60 members, and in December, Joelle Torregrossa, Micki Miskiv, Mike Ordazzo, Zach Thompson and Amy Kallmerten, with Amy as president, were elected to serve on our executive board.

During the fall semester, our largest event was organizing National Chemistry Week to bring chemistry to the entire student body. By using demonstrations and chemistry-related games in Centennial Commons, the group was able to reach a wide range of majors by including them in experiments and handing out give-a-ways. Another aspect of National Chemistry Week that we participated in was the Chemvention Competition. This competition is sponsored by the American Chemical Society and presents a task for student affiliate groups to try to solve. This year's task was to create a toy that teaches a concept of chemistry. NUSAACS created a board game called "ELEMENTS," that focused on basic chemistry concepts at the high school/general chemistry level. "ELEMENTS" was selected as a top five finalist in this year's national competition.

NUSAACS also organized social events for the chapter members to participate in during the semester. We accompanied the chemistry graduate students on a trip to Hyland Orchards to pick apples and pumpkins during the Halloween season. When the weather got cold enough outside, members participated in a trip to Nashoba Valley to enjoy some snow tubing.

During the spring semester, we competed in another national competition sponsored by the American Chemical Society. NUSAACS created a video entry for the Earth Day video competition. The theme was "Dig It," and the video taught students about the environmental

consequences of damaging the ozone layer. Our members also volunteered their time to help out in the community. This included helping out at Rosie's Place by serving food at meal time. Members also assisted at a local nursing home by running an activity of painting pots and planting flowers for the residents to keep in their rooms. Along with these activities, NUSAACS brought in speakers to talk to the members about different careers that are possible after they graduate. Highlights of this program included hosting an Entrepreneur Day, as well as bringing in a speaker from EMD, Dr. Ratan Chaudhuri.

This March NUSAACS sent five members to the National American Chemical Society meeting in Atlanta, Georgia, where they presented posters about the club, the chemistry curriculum, Chemvention, and undergraduate research that had been done. The members also attended undergraduate seminars and demonstrations, gaining a lot of knowledge and ideas to bring back to the club for the next year.

NUSAACS also helped the North Eastern Section of the American Chemical Society organize their May meeting that was held at Northeastern. The meeting is an education night where high school students who have excelled in chemistry are recognized for all their hard work and achievements.

With such a successful year under our belts, we are eagerly looking forward to what the upcoming year will hold.

— Amy Kallmerten
NUSAACS President



Daniels Awarded Goldwater Scholarship

Matthew Daniels, Chemistry '08, has been awarded the prestigious Goldwater Scholarship for his junior and senior years. Established by Congress in 1986 to foster and encourage excellence in science and mathematics, the Barry M. Goldwater Scholarship and Excellence in Education Foundation operates an educational scholarship program designed to provide opportunities for American undergraduate students with excellent academic records and outstanding potential. Goldwater Scholarships support study in the fields of mathematics, engineering and the natural sciences as preparation for



careers in these areas. Each award covers eligible expenses, including tuition, fees, books, and room and board.

This past year, Matthew has been conducting research in the Jones laboratory on the synthesis of fluorinated heterocycles. He will present his findings at the fall national ACS meeting in San Francisco.

We congratulate him on his achievements!

Johnston Receives TA Award

PhD candidate Meghan Johnston is the recipient of the 2005-6 Outstanding TA award in the recitation leader category from the NU Center for Effective University Teaching. Congrats!



Wei Honored with ACS Award

Ying Wei was one of five graduate students nationwide to receive a Chemical Computing Group (CCG) Excellence Award from the American Chemical Society's (ACS) Division of Computers in Chemistry (COMP). The other awardees are from Yale University, University of Oklahoma, Cornell University, and Emory University. Ms. Wei will be presenting her work in the oral session on Drug Discovery of the COMP Division at the ACS National Meeting in San Francisco in September. She will speak on "High-recall, high-precision prediction of protein binding sites from 3D structure." The award will cover her travel to the ACS San Francisco meeting and a one-year license for their Molecular Operating Environment (MOE) software.



Professor Max Diem Optical Diagnosis: Shedding Light on Disease and Biological Processes

The Laboratory for Optical Diagnosis, headed by Prof. Diem, has emerged as one of the leading centers worldwide to apply spectroscopic methods to improve and automate medical diagnoses, and to use new methodologies to monitor biological processes. The new technologies used in the Laboratory are based on recently developed micro-spectroscopic instrumentation for data acquisition, and sophisticated computational methods of multivariate statistics for data analysis. This methodology will render diagnoses, and follow biochemical changes during carcinogenesis and cellular processes, without the use of dyes or chemical labels, using machine-based objective methods.

The newly renovated Laboratory occupies the south-west corner of the third floor of Hurtig Hall, and includes cell culture, computational and spectroscopy laboratories. Major research equipment includes a state-of-the-art Raman micro-spectrometer (WITec, Inc, Germany) with three wavelengths laser excitation, two imaging infrared micro-spectrometers (Perkin Elmer, Inc., Spotlight 300 and 400) and a SmithsDetection, Inc., infrared microscope. With this instrumentation, the Laboratory for Optical Diagnosis is likely the best-equipped micro-spectroscopy laboratory worldwide. For the analysis of the enormous spectral data sets (> 500 MByte) acquired on a daily basis, two 64-bit computers and a server including TByte storage, are housed in the laboratory. A Gbit/s horizontal network connects all instruments in the laboratory.

The Optical Diagnosis research group presently consists of five postdoctoral associates, and a graduate and undergraduate research student, and is funded by two NIH grants from the National Cancer Institute (NCI). Collaborations with the Center for Subsurface Sensing and Imaging Systems (CenSSIS) and colleagues from the Biology and Pharmaceutical Science Departments have been established to fully exploit the unique strength of Northeastern's faculty in the biomedical sciences.



Professors Max Diem and Graham Jones cut ribbon at opening of Diem lab with Diem group members, (l to r) Milos Mijlkovic, Melissa Romeo, Susie Boydston-White and Christian Matthaeus

AstraZeneca makes \$100,000 gift to Department

Pharmaceutical giant AstraZeneca, whose research headquarters is in Waltham, MA, has made a sustaining gift of \$100,000 to the department. Head of medicinal chemistry, Dr. Michael Block, and Director of Research, Dr. Jeffrey Hanke, presented the award in Fall 2005 to enable the department to develop the chemistry major. The funds will be



used in part to upgrade the undergraduate laboratory facilities and establish student scholarships. Block and Hanke became aware of the new BS-MS program for majors at the ACS Pharma Leaders meeting, and opted to support it, following discussions with Chair Jones. In addition to this investment, AZ has initiated its first round of co-op placements, with both Stephanie Muser and Greg Morehouse working at the Waltham research center Fall 2006. Commenting on the magnitude and significance of the gift, Dean of Arts & Sciences, James Stellar, described it as a "testimony to the leadership and energy in the department and the dedication to academic excellence for our student body." Connected with this investment, the department is now administering Astra-Zeneca travel scholarships for students wishing to attend and present research results at regional and national ACS meetings. Application procedures are distributed by the awards committee.

Hurtig renovations continue

The upgrade of Hurtig Hall continued at a steady pace this year. Starting with the third floor, the original physical chemistry teaching lab was renovated into a state of the art spectroscopy lab for new faculty hire Max Diem (see opposite). The physical chemistry lab was then combined with the analytical lab on the fourth floor to create a new synergistic teaching environment. Adjacent to this, a new data analysis lab was created to allow students to use department laptops to work on homework and term projects.

On the first floor, the main office, which has not had significant renovations since the building was built in the 1950's, is being transformed into a modern, service oriented workspace. The plan includes new offices and reception area, a new main entrance, and a centralized service counter. The University has also completed the overhaul of the Hurtig stairwells, making it a more inviting environment for all!

Weiss Symposium: Cutting edge research on membranes and membrane systems

The Graduate Student Association and Department of Chemistry & Chemical Biology were pleased to host the 2006 Karl Weiss Symposium on April 21, which highlighted research in the area of membranes and membrane systems. Keynote speakers were Dr. Robert Langer of MIT,

who spoke of advances in drug delivery and tissue engineering, and Dr. John Kerr, Lawrence Berkeley National Laboratory, who presented his research findings on single ion conductors for batteries and fuel cells. Northeastern researchers included Dr. Sanjeev Mukerjee, who

spoke on the topic of transport phenomenon and durability issues in a new class of proton exchange membranes, and Dr. Kim Lewis of the Biology Department, whose talk was entitled "Sterilizing Antimicrobials: A Rational Approach to Biofilm Therapy."

The GSA and the department thank Dr. Karl Weiss, Professor Emeritus, for his generous support of the symposium.

l to r: Dr. John Kerr, Lawrence Berkeley National Laboratory; Dr. Kim Lewis, Northeastern University; Dr. Robert Langer, MIT; Dr. Karl Weiss; Mr. James Glick, NU GSA, Dr. Sanjeev Mukerjee, Northeastern University



Staff News

Paul DiMilla, academic specialist, and **John Bottomy**, organic lab technician, were recipients of 2005-6 Departmental Service Awards. The award recognizes individuals whose commitment to our academic mission results in service contribution over and above that normally expected in their respective job description.

Ken Chung, a part-time lecturer for several years, has been appointed as a full-time lecturer and will teach introductory chemistry courses.

Alumni News

Dr. Feng Chen, Ph.D. '91, and now an Associate Professor of Chemistry at Rider University, was named one of two recipients of Rider University's Distinguished Teaching Award at the University's 141st Commencement in May. Dr. Chen had previously received, in 2000, the Rider University Award for Excellence in Scientific Research. Dr. Chen obtained her Ph.D. degree at NU with a thesis on novel high-Tc superconductors; this work is reflected in 10 journal publications with her co-advisors, Professor B.C. Giessen (CCB) and Professor R.J. Markiewicz (Physics).

Dr. Jerry W. King, Ph.D. '73, has been named the Ansel and Virginia Condray Distinguished Professor of Chemical Engineering at the University of Arkansas. In addition to his position in the College of Engineering, he will also serve as an adjunct professor in the food science department of the Bumpers College of the Agricultural, Food and Life Sciences. Dr. King's other honors include being selected to hold a Marie Curie Chair by the European Union in 2004, and in 1997, receiving the Harvey Wiley Award from the Association of Official Analytical Chemists, the organization's most prestigious honor.

Dr. Gerritt P. Bean, B.S. '52, is now a Visiting Fellow at the University of Colorado, Boulder, following retirement from Western Illinois University where he spent most of his career, including as chairman for several years. While at NU, Dr. Bean did a co-op at Arthur D. Little and was encouraged to pursue a graduate degree by Professor Saverio Zuffanti. He received his Ph.D. from Penn State.

Congratulations to our alums on their successful careers! We welcome news from you as well as visits if you will be in the area. Please contact Shari Khalil at s.khalil@neu.edu or 617-373-2822.

In Memoriam

We were deeply saddened to learn of the death of Dr. Elmer E. Jones on May 24, 2006. He was an associate professor of chemistry at NU for 32 years, retiring in 1990.

He was born September 2, 1926 in Hinsdale, Illinois. After serving in the Navy, Dr. Jones obtained his Bachelors degree at the University of Chicago, and a doctorate in Chemistry from Washington University in St. Louis in 1957. During his graduate studies, he met his future wife, Alice Williamson, who was pursuing a doctoral degree in zoology. They moved to Boston, where Dr. Jones taught at NU, and his wife taught biology at several area colleges. They moved to Weston, where their daughter, Laura, was born and they have since lived.

An avid train enthusiast, he loved to share the enjoyment of nature with others through both hiking and the study of natural history. He led nature walks for numerous groups including the Appalachian Mountain Club, The New England Wildflower Society and the Weston Forest and Trail. He wrote the book, *Walks on Weston Conservation Land: A Guide*. Dr. Jones was active in conservation activities; in 2001, both he and his wife received an award for service to the New England Wild Flower Society.

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