

Department of Chemistry and Physics Newsletter

Spring '09

Chair's Corner

My second favorite day of the academic year is the first day of the fall semester. Early that morning, I walk into one of our lecture rooms. Before me sit about fifty students, mostly 18- and 19-year olds, whose first classroom experience in college just happens to be freshman chemistry. Yikes! One can sense the tension in the room. Students wonder who they're sitting next to, who this professor is that just entered the classroom, and what will it take to succeed in this class. I wonder who these students are and what compelled them to enroll in chemistry.

Students may not recognize so on Day One, but some of the strongest relationships that they will establish during their four-year college experience begin that day, with other students in that classroom and potentially with their professor. Freshman-level courses in chemistry and physics are rather challenging, even for the most academically prepared students. To survive and excel generally requires that students network well with each other and with the faculty, which tends to happen naturally as students will spend countless hours in our teaching and research labs, in our offices, and in activities with American Chemical Society Student Affiliate and Society for Physics Students.

A brief four years later, on my favorite day of the academic year, these students will receive their diplomas and leave ISU to start their career, graduate school, or professional program. We are proud of our former students and are delighted to have spent a few years working with them. We wish

them well as they depart to do great things.

Keep in touch!

—Eric Glendening



William Jackson,
2009 chemistry graduate

Budget Challenges

The recent economic downturn presented the Department with several challenges this past year. Cuts to the University's allocation from the State have had an unfortunate impact on our programs. Most significantly, we were interviewing candidates for a faculty position in physics when the search (along with most others on campus) was canceled. We must now deliver the physics program, with its majors, service, and general education courses, with only three physics faculty members and a lab coordinator. Furthermore, renovation of teaching labs in the Science Building is on hold. The State approved funding for the renovation project two years ago but never released the funds to the University. We trust that the renovation project will resume and that we'll be able to search for another physicist once the economy recovers.

Arthur Halpern Receives 2009 ISU President's Medal

In April University President Daniel Bradley presented Arthur Halpern with the 2009 President's Medal, the University's highest award for faculty. Prof. Halpern became a member of the ISU faculty in 1990 and has since served as chair of the Department of Chemistry and interim chair of the Department of Physics, and is currently the interim chair of the Department of Biology. He has also served the University as a member of the Faculty Senate, the search committee for the university president, and search committees for deans of the College of Arts and Sciences, in addition to serving on a variety of other boards, committees, and task forces. During his career he has authored more than 100 academic publications, most of which have been in the area of physical chemistry, particularly the photophysics and spectroscopy of organic molecules and, more recently, computational chemistry, mainly with educational applications. He is also the author of a physical chemistry laboratory textbook, currently in its third edition. We extend our congratulations to Prof. Halpern and appreciate his service to the Department and the University!



**Halpern (center) receives medal
from President Bradley (right).**

Chemistry Faculty Profile: Eulsun Seung

Eulsun Seung joined the ISU Department of Chemistry and Physics in the fall of 2007 as a tenure-track assistant professor. She is originally from Seoul, South Korea. She received her B.S. in Chemistry Education from Seoul National University and her doctorate, with a focus on Science Education, in 2007 from Purdue University (the Department of Curriculum and Instruction).



Professor Eulsun Seung

Eulsun's research agenda has three strands: knowledge for teaching, reflection, and the nature of science. She is interested in the nature of professional knowledge for science teaching and the process of teachers' professional knowledge development. She is currently conducting a study focusing on elementary preservice teachers' knowledge development using metaphor analysis. A second project involves investigating the effectiveness of evidence-based reflection in the mentoring context, as well as determining effective ways to encourage elementary preservice teachers' reflection in the context of video analysis tool use. Regarding the nature of science, she is conducting a study that investigates improvement of university students' process skills, reasoning ability, and understanding of the nature of science through a process-oriented chemistry laboratory curriculum at ISU.

Eulsun's main teaching assignments at ISU are the elementary (SCED 393/393L) and

secondary science methods (SCED 396L/398L) courses, which include the responsibility of supervising the students during their practicum period. Her primary goal as a science educator is to use her research and teaching experiences to improve the preparation of K-12 science teachers. Prior to her doctoral work, she taught chemistry and general science for 13 years in urban secondary schools (grades 6 to 12) in Korea. This teaching experience instilled in her the conviction that the quality of science education for K-12 students is greatly dependent on the quality of science teachers.

More information about Eulsun's research interests and publications is available at: www.indstate.edu/chemistry/seung.htm

ACS Student Affiliates Receive Recognition

The American Chemical Society Student Affiliates (ACS-SA) is the official organization of the ACS for undergraduate students majoring in chemistry and related fields. ACS-SA chapters provide opportunities for students to participate in numerous programs and activities that help prepare them for successful careers, enhance their educational experience, and enable them to become involved in campus and community life.

The ISU ACS-SA chapter was recognized with a "Commendable" Award at the 2009 spring National ACS Meeting in Salt Lake City, Utah. Each year the national ACS reviews reports submitted by ACS-SA chapters describing their activities, and recognizes those chapters that demonstrate an outstanding record of activity over the past academic year. In several previous years the ISU ACS-SA received "Honorable Mention," but for the 2007-2008 academic year it received a higher level "Commendable" Award for the first time ("Outstanding" is the highest level awarded). Congratulations to officers Rachael Chase, Michael

Schulte, Ryan Galloway, Amanda Melberg, and Madison Updike for their efforts and leadership which led to this award!

ACS-SA activities during the 2008-2009 academic year included monthly hands-on activities at the Terre Haute Children's Museum and "Chem 4 Kids," a hands-on activity for local 4th and 5th-grade students—49 children participated this year! During National Chemistry Week, the ACS-SA organized a special activity at the Children's Museum which involved helping children build molecular models of chemicals that are found in chocolate. The ACS-SA was involved in a variety of activities to benefit the local community, including a food drive called "Jam the Bus," a blood drive, and fundraising for the Children's Museum and St. Jude Children's Hospital. The chapter sold lab goggles and padlocks to ISU students enrolled in lab courses, held a bake sale, and sold T-shirts to raise money to fund their activities. Social events included the annual fall cookout and spring senior send-off dinner, as well as a pumpkin-carving contest for Halloween and a holiday party in December.

Engineering Dual Degree Program Approved

In October of 2008 ISU and the University of Evansville reached an agreement on the details of a Physics and Engineering Dual Degree program. Under this plan, students study physics, math, and technology at ISU for three years, and then spend two years at the University of Evansville completing courses in civil or mechanical engineering. A key element of this agreement is that students know ahead of time that their coursework transfers between both institutions and satisfies all requirements for graduation at both schools. The plan enables students to simultaneously earn a BS degree in physics from ISU and a BS degree in engineering from the University of Evansville.

Chemistry Students Present their Research at Local, Regional, and National Meetings

ISU Celebration of Student Scholarship

Eleven chemistry majors gave poster presentations of their research projects this spring at the ISU Celebration of Student Scholarship, held at ISU's Cunningham Memorial Library April 8, 2009. This was a new event, taking the place of the Undergraduate/ Graduate Research Showcase which had been held on campus each spring for the past few years. The new event featured the research and creative efforts of ISU students from all units of the University and thematic areas of interest. The event gave student presenters the opportunity to engage fellow students, faculty, and visitors in discussions about their research projects.

Regional Meetings

Six chemistry majors presented posters or gave oral presentations at the following meetings.

- Eli Lilly Undergraduate Research Fellows Symposium, Indianapolis, Jul. 22, 2008;
- 124th meeting of the Indiana Academy of Science, Evansville, IN, Oct. 24, 2008.

National ACS Meeting

Nine chemistry majors, along with Professors Rick Fitch and Eric Glendening, attended the 237th spring National American Chemical Society meeting in Salt Lake City, Utah, in March. Each of the students presented his/her research in the Chemical Education Division poster session. In addition to attending poster sessions and talks, the students had time to take in the local sites. Travel funds were provided by the Department of Chemistry and Physics, the College of Arts and Sciences, the ISU Academic Affairs Office, and the Wabash Valley Section of the ACS.

Recent Grants and Publications

Members of the Department published in the following chemistry and physics journals over the past year: *Bioorganic and Medicinal Chemistry* (R. Fitch); *European Journal of Physics* (J. West); *Journal of Agricultural and Food Chemistry* (B. Flurkey, J. Inlow); *Journal of Applied Physics* (G. Zhang); *Journal of Inorganic Biochemistry* (B. Flurkey, J. Inlow); *Journal of Natural Products* (R. Fitch); *Journal of Physical Chemistry A* (G. Zhang); and *Organic Letters* (R. Fitch). V. French and G. Zhang were co-authors of the textbook *The Science of Nanotechnology: An Introductory Text*.

Papers in the area of chemical education were published in the following journals: *Biochemistry and Molecular Biology Education* (B. Flurkey, J. Inlow); *Journal of Chemical Education* (A. Halpern, R. Kjonaas); *Journal of Science Teacher Education* (E. Seung); and *The Science Teacher* (E. Seung). E. Seung co-authored a chapter in the book *Science Education at the Nexus of Theory and Practice*.

External grant funds were received during the past year by R. Fitch from Eli Lilly and Company. The following received internal grants from various ISU programs: R. Fitch, E. Glendening, and E. Seung.

Fall 2008, Spring 2009 Chemistry and Physics Graduates

The eleven graduating chemistry majors this academic year were: Stephanie Braun, Charlie Cochran, Sean Gallagher, Ryan Galloway, William Jackson, Paige Miller, Tyler Richey, Michael Schulte, Peggy Williams, Jordan Wolfe, and Jessica Wright. The two graduating physics majors were: Mathew Hollinger and David Spalla. We extend our congratulations to our graduates and wish them success in their future endeavors!

Undergraduate Awards in Analytical and Organic Chemistry

The Undergraduate Award in Analytical Chemistry is an annual award presented by the Department and sponsored by the American Chemical Society Division of Analytical Chemistry and the journal *Analytical Chemistry*. The award is presented to a student or students who display an aptitude for a career as an analytical chemist. The winner of the 2009 award is **Breanna Wyman**. Breanna will receive a personalized certificate, a souvenir item, and monthly emails from the American Chemical Society journal *Analytical Chemistry* containing highlights, news, and feature sections from the journal during the 2009-2010 academic year.

Each year the Outstanding Achievement in Organic Chemistry Award is presented by the Department to a student or students to recognize outstanding academic performance in CHEM 351/352. This year's recipient of the award is **Breanna Wyman**.

Society of Physics Students Active Again

In 2008 the Society of Physics Students (SPS) attained a membership large enough to achieve recognition as an official ISU student organization for the first time in more than a decade. This is the result of hard work by student leaders over the past five years. Prof. Joe West is the group's faculty advisor. During the 2008-2009 academic year, SPS conducted physics demonstrations for local 7th graders and sponsored a seminar on the ISU campus by Harold Evans of the Indiana University Department of Physics. Prof. Evans spoke on the Large Hadron Collider, a particle accelerator located near Geneva on the border of France and Switzerland. Next year SPS hopes to increase its membership and participate in more campus and community activities to promote knowledge of physics.

Faculty Briefs...

Chemistry: **John Allen** has been working with Eric Glendening and Larry Rosenhein to improve student learning and retention by providing workshops for general chemistry students. He has also been working with a research student to investigate the photostability of some diuretic drugs. **Sandy Allen** continues to teach general education courses for the Department. **Rick Fitch** has been recommended for tenure and promotion. This summer he will be attending a natural products meeting in Hawaii. In keeping with the theme, he will be collecting poison frogs on the trip with a collaborator, in order to identify any changes in their alkaloid profiles in response to climate change. He will also supervise six undergraduate students as part of the 2009 SURE program. **Bill Flurkey** has been supervising several students working on the inhibition of mushroom tyrosinase and stabilization of this enzyme after purification. He has also incorporated new experiments into various laboratory courses, including hydrolysis of aspartame, determination of sugar content of honey and protein content of liquid sport drinks, and a method to clean pennies. **Eric Glendening** divides his time at work between serving as departmental chairperson, teaching Chem 105/106, and serving on a committee that is revising the University's General Education program, to be called "Foundational Studies." **Arthur Halpern** is completing a year as the provisional chairperson of the reorganized ISU Biology Department. **Jennifer Inlow** had two manuscripts accepted for publication during the fall 2008 semester, and she is preparing her tenure application which is due this summer. **Rich Kjonaas** has been spending time developing new experiments for the organic chemistry course. An experiment recently developed with the help of two research students is the synthesis of ibuprofen. **Beverly Pestel** is implementing a new Chem 100 lab program that takes a non-traditional approach to the

laboratory experience of the non-science major. The focus is on the process of chemistry and how chemists collect and utilize information in solving problems. She is collaborating with Eulsun Seung in collecting research data to study the new curriculum. **Larry Rosenhein** is currently the chair-elect of the Wabash Valley ACS. He is also still serving as the faculty advisor to the ISU ACS student affiliates group which this year received a rank of "Commendable." **Eulsun Seung** has been organizing a science education lab/lecture classroom with the help of a student worker. She has taken on a new role as academic adviser for science education students. **Steve Wolf** continues to be productive in the fields of cosmochemistry and environmental chemistry. He is currently working with research students to develop X-ray fluorescence spectrometry for the analysis of meteorites.

Physics: **Valentina French** has been serving as the Physics program coordinator and academic advisor for all Physics majors. **Joe West** will be working with students this summer, possibly taking them to Rose-Hulman to do some experiments on asphaltene (crude oil "gunk") with a femto-second laser system. As a class project this spring, his advanced mechanics class wrote computer simulations of fireworks shows in Vpython, complete with full 3-D graphics, and with the proper wind resistance and physics built into the trajectories. **Guo-ping Zhang** had several publications this year including an invited feature article in the *Journal of Physical Chemistry*.

Retired Faculty Briefs...

Chemistry: **Myong Ahn** is living in Michigan. **Marlowe Owen** recently moved into a new condominium in Terre Haute. **D. J. Reuland** taught two Chem 105 labs this spring, while **Alan Siegel** taught two Chem 104 labs. **Pat Tatum** is living in Terre Haute and is traveling as much as ever. **W. A. Trinler** is living in the Seelyville area.

Physics: **Torsten Alvager** is still living in Terre Haute and can often be seen on campus. He still collaborates with members of the ISU Math Department. **Adron Barbee** is living in Terre Haute. **Walt Carnahan** is living in California. **Phil Di Lavore** is living in Terre Haute. **Uwe Hansen's** translation of a standard text on musical acoustics, *Acoustics and the Performance of Music*, is now in print. He also wrote a chapter on modeling of musical instruments in the *Springer Handbook of Signal Processing in Acoustics*. He gave several invited presentations on physics demonstrations at a national conference in February, and will be conducting a tutorial titled "Music: Science and Performance" in Portland this May for the Acoustical Society of America. He still teaches as an adjunct instructor at ISU for the math and physics programs. **John Swez** taught several classes in the Department this year, including Astronomy. **James Westgard** is living in Wisconsin.

Staff Briefs...

Patti Archer and her husband Bob enjoy traveling to Kentucky and Indianapolis to visit their two sons and their families. **Tammy Barnes** divides her time at work between the Science Education office and the Physics office. She enjoys making trips to Florida to visit her sister. **Mitzi Nichols** is celebrating her daughter's graduation this spring from the pharmacy school at Butler University. Along with teaching several labs, **Michelle Baltz-Knorr** is working with the Physics faculty to revamp some of the introductory physics labs, which will be part of the Fall 2009 curriculum. **Erik Ingebrigtsen** continues to keep the chemistry stockroom running smoothly. During spring break, he and his wife visited the site of the Battle of Gettysburg.

Chemistry and Physics Summer Undergraduate Research Experience

The summer of 2008 marked the third consecutive year that the Department organized a formal Summer Undergraduate Research Experience Program, or SURE. This ongoing program provides students an opportunity to participate in an intensive research experience under the direct supervision of a faculty mentor during the summer months. Research fellowships have been supported by a combination of funds from the College of Arts and Sciences, the Department of Chemistry and Physics, as well as intramural and extramural funds. Nine of the students participating in the 2008 SURE Program presented their research at the 2009 spring National ACS Meeting in Salt Lake City, Utah.

The 2009 SURE Program is already underway. This year the program has expanded to include faculty and students from the Departments of Chemistry and Physics; Geography, Geology and Anthropology; Biology; and the IU Medical Center. This summer more than 30 students are working under the mentorship of

twelve ISU faculty representing these departments. Sixteen of these students are working with six faculty members in the Department of Chemistry and Physics. Students and faculty mentors in the Department of Chemistry and Physics who are participating in the 2009 SURE Program are:

2009 SURE Fellow	Research Advisor
Amanda Barlage	Rick Fitch
Andrew Beaven	Eric Glendening
Byron Boulton	Eric Glendening
Chase Buchanan	Eric Glendening
George Fritch	Bill Flurkey
Autumn Fuller	Bill Flurkey
Christopher Gagnon	Stephen Wolf
Jimmy Hubbs	Rick Fitch
Meredith Lewis	Eric Glendening
Ryan Lidster	Joe West
Kelly Loman	Guoping Zhang
Heather Stout	Joe West
James Tingley	Rick Fitch
Patrick Titzer	Rick Fitch
Tory Torma	Rick Fitch
Breanna Wyman	Rick Fitch

Alumni Notes...

Nilah Nicole Bonham (Chem BS, '01) of Terre Haute is an optometrist with her own practice in Brazil, IN, as of October, 2007. The website is: www.eyecarespecialists.org

Donald Clark (Chem BS, '53; MS, '57) of Jupiter, FL, is a retired teacher of 40 years.

Julie (Goodman) Dojahn (Chem BA, '77) of Angleton, TX, earned a Ph.D. in analytical chemistry in 1999. She has worked as a plant chemist, a high school chemistry teacher, and currently works for Dow Chemical Company.

Chris Edwards (Chem BS, '05) of Fischers, IN, recently accepted a position with Roche Diagnostic performing/coordinating calibration and maintenance activities for R&D and manufacturing-related labs.

Emil Fleck (Phys BS, '78; MS, '84) of Evansville, IN, has taught high school physics for 31 years. He is married to Nancy Lashbrook, a Terre Haute native and ISU graduate.

Jennifer Gatsos-Walter (Chem BS, '99) of Indianapolis works as an oncology pharmacist with Community Health Network. She and her husband welcomed their first child, Sofia Roxanne, on Oct. 17, 2007.



Pictured at the left are participants in the Department of Chemistry and Physics 2008 SURE Program. First row (L-R): Prof. Guo Ping Zhang, Beth Neeley, Kendall Seward, Anna Coffey, Mylaka Clinedinst. Second row (L-R): Prof. Stephen Wolf, Josh Brown, Chris Hauger, Megan Morris. Third row (L-R): Prof. Richard Kjonaas, Peggy Williams, Rachael Chase, Prof. Larry Rosenhein. Fourth row (L-R): Andrew Beaven, Prof. Bill Flurkey, Mike Schulte, Prof. Rick Fitch. Fifth row (L-R): Prof. Eric Glendening, David Counce, Joe Glair, Ryan Galloway. Not pictured: Logan Fulford, Ryan Lidster, Prof. Joe West.

Indiana State University
Dept. of Chemistry & Physics
Terre Haute, IN 47809



ISU Department of Chemistry and Physics Newsletter

We want to hear from you!

Future issues of the *Department of Chemistry and Physics Newsletter* will include the "Alumni Notes" section, featuring a summary of recent activities of ISU chemistry and physics alumni. If you'd like your information included in the next issue, please send it by email to Jennifer Inlow (inlow@carbon.indstate.edu) or complete the form on the insert and mail it to the Department.

New Department of Chemistry and Physics website.

The new combined Department of Chemistry and Physics website was launched last winter and is now available at:
<http://www.indstate.edu/chemistry/>

Questions or comments?

Contact
Eric Glendening, chairperson, at:
glendening@indstate.edu or
812-237-2239.