

Department of Chemistry and Physics Newsletter

Summer 2015

Chair's Corner

I would like to welcome two new colleagues to the Department of Chemistry and Physics. Ryan Van Hovel and Brendon Mikula will join the faculty this fall. Ryan is completing his Ph.D. in organic synthesis at the University of Wisconsin-Madison this summer. He replaces Rich Kjonaas who retired after 32 years of teaching at ISU. Brendon completed his Ph.D. in physics at Ohio State University this spring, specializing in physics education. Brendon's position increases the number of faculty in our physics program from three to four, which is much needed due to the considerable growth in demand for physics courses in recent years.

I am pleased to report that all previously unrenovated physics laboratory teaching space has been finally updated. All of this space was of original construction, dating from the early 1960s, and was desperately in need of renovation. The new labs are very inviting and functional spaces now, and we look forward to working with students in these labs. Several chemistry research labs were renovated at the same time. At last, all teaching and research laboratory space in the department, with the exception of the area around the old Radiation Lab, has been renovated, most of it within the last decade.

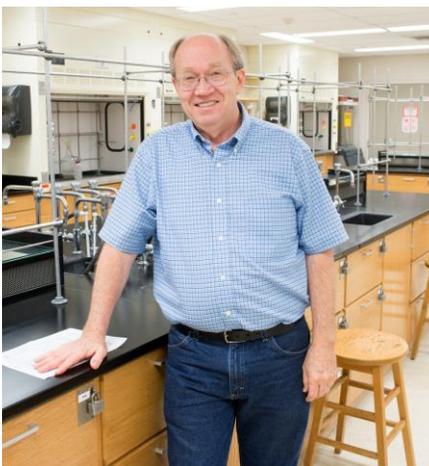
On a personal note, I just completed my twentieth year at ISU, and tenth year as chairperson. It is remarkable how quickly the years have passed. There is rarely a day that I'm not delighted to come to campus, largely because

I work with very good people, including outstanding colleagues, strong students, and supportive administrators. Ultimately, it is these people that make our chemistry and physics programs great and for whom I am most grateful.

Keep in touch. —Eric Glending

Prof. Richard Kjonaas Retires After 32 Years at ISU

Prof. Kjonaas joined the chemistry faculty at ISU in 1983. He taught a variety of courses over the years, but his specialty was organic chemistry, CHEM 351/352. He developed his own laboratory manual for the 351/352 lab courses. While at ISU he worked with more than 50 research students and authored or coauthored more than 20 articles. He was very popular with students and was well respected by the faculty in and outside the Department. He will be greatly missed! Rich and his wife, Debbie, plan to stay in Terre Haute.



Highlights from the 2014-2015 Academic Year

- Members of the Department and students alike enjoyed utilizing the newly renovated biochemistry lab, General Chemistry lab, physics teaching labs, Chemistry and Physics Help Center, and several research labs (inorganic; physical chemistry). See page 2 for photos of the renovated physics teaching labs.
 - Chemistry professor Rick Fitch was promoted to Full Professor this spring.
 - Adrienne Gilbert completed her first academic year in the Department as a Chemistry Instructor (see page 2 for her profile).
 - ISU alumnus Robert Compton (class of '12) taught General Chemistry labs this past year to help cover increased enrollments in our 100-level courses. Robert will continue teaching labs during the coming academic year.
 - Brendan Mikula will join the Department this fall as a Physics Instructor; he will teach General Physics lecture and labs along with astronomy.
 - Ryan Van Hovel has been hired as a tenure-track organic chemist and will teach organic lectures and labs in the fall, in addition to setting up his research program. Ryan will complete his Ph.D. this summer from the University of Wisconsin-Madison, working under the mentorship of Prof. Jennifer Schomaker.
-

Physics Laboratory Renovations

The Physics Program had four rooms renovated in 2014, beginning in March and completed in August, readying them for Fall '14 classes. Along with new flooring, paint, and drop ceilings, these rooms were given new layouts and furnishings to increase functionality. The renovated rooms include the laboratory where the second semester of introductory physics lab is taught (room 109), the two rooms where modern physics labs and advanced labs are taught (rooms 133 and 135), and the Chemistry and Physics Help Center (room 115). Rooms 133 and 135 were joined with an interior door which allows easy movement between the two rooms, while still enabling separation of experiments that require darkness from those that require light. A new optics table to be used for experiments such as interferometry was added to room 135. All of the rooms are now bright and open with abundant storage space. There is enough free space so that students can work on all sides of the tables when performing experiments, and the light-colored table tops make it easy to keep track of the equipment, especially when doing experiments in the dark.



Room 109



Room 133

Chemistry Faculty Profile: Adrienne Gilbert

Adrienne Gilbert joined the ISU Department of Chemistry and Physics in the Fall of 2014 as a chemistry instructor. She grew up in Iowa and Indiana and received a B.S. in chemistry from Purdue University. Adrienne completed her doctorate in 2009 at the University of Massachusetts-Amherst where her research focused on the intermolecular electron transfer reactivity and dynamics of protein-nanoparticle adducts.

After completing her doctorate in 2009, Adrienne joined the faculty at Penn State Erie, The Behrend College as a lecturer in chemistry. During her five-year stay, her teaching responsibilities included general education chemistry, general chemistry, a survey of organic chemistry, and organic chemistry labs. She was also active in the local ACS section, serving as the ACS councilor and National Chemistry Week coordinator with a popular outreach program.

During her first year at ISU, Adrienne taught foundational studies chemistry lecture and lab (CHEM 100/100L), elementary chemistry (CHEM 103), and organic chemistry labs (CHEM 351L/ 352L). In the fall, Adrienne will also teach general chemistry (CHEM 105).



Adrienne Gilbert

Physics Laboratory Renovations: Before (left) and After (right)



Physics Faculty Receive University's Highest Awards for Teaching and Research

Valentina French was recognized this spring with the Caleb Mills Distinguished Teaching Award. Dr. French received her B.S. in Physics from the University of Bucharest and her Ph.D. in Physics from Oklahoma State University. She joined the physics faculty at Indiana State University in 1993 and was promoted to Associate Professor in 2000. Dr. French serves as the academic advisor for all physics majors and as the coordinator of the physics program. She teaches some of the most challenging, math-intensive courses on campus, ranging from Classical Mechanics for freshman-level students to Electricity and Magnetism, and Quantum Mechanics, for upper division students. Students have many positive comments about her teaching, such as: "I enjoyed coming to class every day. Dr. French is an excellent instructor. She is very encouraging and provides an overall good learning environment." The Department is delighted that her commitment to students and teaching was recognized with this award.



Valentina French



**Evan Rush
Recipient of
the Hines
Medal and
this year's
Outstanding
Graduating
Senior
Chemistry
Major**

Guoping Zhang was honored with the 2015 Theodore Dreiser Distinguished Research and Creativity Award which recognizes ISU faculty who have made outstanding contributions to their disciplines. Dr. Zhang received his B.S. in Physics at Nanjing Normal University and his Ph.D. in Condensed Matter Physics at Fudan University. He completed postdoctoral appointments at the Max Planck Institute in Germany and at the University of Tennessee before joining the physics faculty at ISU in 2002. He was promoted to Associate Professor in 2008, and to Professor in 2012. Dr. Zhang's research is computational, focusing mainly on ultrafast magnetization of materials as he and his collaborators seek to increase the speed at which information can be stored in devices. To date, he has published 94 peer-reviewed papers. Nearly 60 of these have been published since he joined the ISU faculty, including 18 papers since his promotion to full professor. Of his publications, eleven have appeared in *Physics*

Review Letters, one of the highest profile journals in physics, and one article was published in *Nature Physics*, one of the most selective venues in which to publish science. Dr. Zhang's computational work has received over \$800,000 of external funding from the U.S. Department of Energy. He currently serves as a journal and grant reviewer for a large number of physics journals, and for the National Science Foundation and the Department of Energy. He also engages students in his research program, typically working with 4-5 students as part of the Summer Undergraduate Research Experience (SURE) Program.



Guoping Zhang

Senior Chemistry Major Receives Hines Medal

Evan Michael Rush was one of four graduating seniors recognized during spring commencement as a recipient of the Hines Memorial Medal. The medal is awarded to students with the highest cumulative grade-point average during the pursuit of a bachelor's degree at ISU. Evan, the son of Betty and Michael Rush, graduated from Bloomfield High School in 2011. In the Fall of that year he came to ISU as a member of the Rural Health Program. In addition to the Hines Medal, Evan received several other awards recognizing his academic achievements at Indiana State. These have included the Freshman Chemistry Achievement Award, the Outstanding Achievement in Organic Chemistry Award, the Dr. Maxell E. Britton Memorial Scholarship, and the P.D. Wilkinson

Award, given to the outstanding senior chemistry major. Evan studied abroad in Finland during May 2014, has participated in Alternative Spring Break for four years, is an active member of Big Brothers/Big Sisters, and has been a Resident Assistant in Pickerl Hall for the past three years. Within the chemistry program, Evan was a tutor in the Chemistry Help Center, a laboratory teaching assistant, and a participant in the Summer Undergraduate Research Experience (SURE) Program. Evan is graduating with honors with a chemistry degree and biology and civic leadership minors. He has been accepted to the Indiana University School of Medicine and will attend the Terre Haute campus in the Fall. After completing medical school he is interested in pursuing surgery or endocrinology.

Faculty Briefs...

Chemistry:

Robert Compton taught general chemistry labs during the past academic year and will return to teach in the Department again in the fall. **Rick Fitch** was promoted to Full Professor this spring. As usual, he is working with a number of students in the SURE program on his ongoing research involving nicotine receptors. **Bill Flurkey** really enjoyed teaching in the newly renovated biochemistry lab last fall. He taught CHEM 104 last spring, something he had not done in many years. **Adrienne Gilbert** completed her first year in the department. In addition to teaching CHEM 100 and 103 lectures, she taught organic labs and served on a few committees. See her profile on page 2. **Eric Glendening** will bicycle along the Chesapeake and Ohio Canal Towpath in Maryland and West Virginia this summer. **Richard Guanawardane** retired from teaching at the end of the Fall 2014 semester. **Jennifer Inlow** spent the spring semester on sabbatical, studying the fermentation process of kombucha tea. She also attended Dr. Flurkey's CHEM 432 course, as a student, in order to learn more about metabolism. **Amila Jeewandara** taught the new Preparatory Chemistry course, CHEM 101, for the first time last fall. She is teaching CHEM 105 this summer while taking classes to earn her MBA. **Rich Kjonaas's** title has changed from "Professor of Chemistry" to "Professor Emeritus of Chemistry," but he is still teaching summer classes. He and his wife, Debbie, plan to continue living in Terre Haute. **John Moody** completed his second year at ISU. He continues to teach CHEM 100, 105, and 106 during the fall and spring semesters, and will teach CHEM 106 this summer. **Rob Noll** continues to teach physical chemistry (Chem 461 and 462) each fall and spring semester. In the summer he will continue his research in ion mobility spectrometry and portable gas chromatography, working with

several undergraduate students in the SURE program. **Larry Rosenhein** has a newly renovated research lab with a glove box where he continues his research on metal-isocyanides. **Eulsun Seung** was on sabbatical during the spring semester. She spent part of the semester in South Korea in order to work with a collaborator there.

Physics:

Valentina French received the Caleb Mills Distinguished Teaching Award this year (see page 3). **Joe West** is working this summer with two student researchers studying the dynamics of rolling polygons. The polygons will be designed by the students and "printed" using the new 3D printer in ISU's College of Technology. He hopes their work will be able to contribute to the Earth Pyramid project (see <http://www.earthpyramid.org/>). **Guo-ping Zhang** received the 2015 Theodore Dreiser Distinguished Research and Creativity Award (see page 3).

Staff Briefs...

Patti Archer often travels to Columbus and Toledo, OH to visit with her sons and their families. She also enjoys working at Union Hospital with two former ISU students—first-year resident Patrick Titzer and medical student George Fritch—and seeing their transition to practicing physicians. **Mitzi Nichols** is busy this summer helping to coordinate the SURE program. Planning lunch for 50 students each Friday is a big job! This summer **Michelle Baltz-Knorr** will be installing new PASCO interfaces and software in the newly renovated physics teaching lab for use in the second semester introductory physics labs (PHYS 106L and 116L). She enjoyed teaching in the renovated labs this past year. **Erik Ingebrigtsen** and his wife have enrolled in ISU's MBA program and have begun taking classes.

Alumni Notes...

Thomas Marton (Chemistry BS, '74; Chemistry MS, '76) is retired from Monroe Community College in Rochester, NY. He is currently assisting his wife in teaching Religious Education at their local parish.

Amanda Melberg (Chemistry BS, '08) is working as an analytical chemist for MPD Inc. in Kentucky. She ran a marathon last April.

Sixteen Students Received Chemistry or Physics Degrees in May

The fourteen graduating chemistry majors this academic year were Heath Bennett, Michael Biggs, Lacey Brinegar, Daniel Burkett, Brookelynn Burmeister, Daniel Dalton, Hallie Harbison, Seth Lutjemeyer, Marcelos Mbabit, Kristopher Rogers, Lauren Rollings, Evan Rush, Austin Thomas, and Amber Wilcox. Francis Hull and Alec O'Neal were the graduating physics majors. These students and their parents were honored at a departmental reception prior to the commencement ceremony on May 9th.

Recent Grants and Publications by the Faculty

Members of the Department published in the following chemistry and physics journals over the past year:

Analytical Chemistry (R. Noll);
Applied Physics Express (G. Zhang);
EPL (G. Zhang);
International Journal of Modern Physics B (G. Zhang);
Journal of Applied Physics (G. Zhang);
Journal of Physics: Condensed Matter (G. Zhang);
PLoS One (J. Inlow);
Springer Proceedings in Physics, Vol. 47 (G. Zhang);
The Chemical Educator (W. Flurkey)
 G. Zhang received a U.S. Department of Energy grant.

Summer Undergraduate Research Experience Program Celebrates its 10th Anniversary!

This summer marks the ten year milestone for Indiana State's Summer Undergraduate Research Experience, or SURE Program. The largest group of students to date, a total of 52, is participating this year. The ongoing program provides ISU students an opportunity to participate in an intensive research experience under the supervision of a faculty mentor from ISU or the IU School of Medicine for ten weeks during the summer. Students receive SURE Fellowships supported by a combination of funds from the Department and the College of Arts and Sciences, as well as intramural and extramural funds.

Pictured below are student and faculty participants in last summer's 2014 SURE Program.

First row (L-R): Allison Schoenberg, Travis Norman, Mariyam Houston, Jaleesa Holmes, Mopelola Akinlaja, Veronica Rodriguez, Dr. Rick Fitch, Dr. Rob Noll, Dr. Nathan Myers. Second row (L-R): Alan McCune, Sarah Ford, Taylor Nolting, Sarah Rusie, Hanna Brant, Tulsı Vaid, Keeley Williams, Dr. Jeffery Stone, Shana Shepard, Dr. Jen Latimer. Third Row (L-R): Suji Lee, Rachael Gonzalez, Kyle Drake, Lizhi Xiang, Tanner Latta, CaSondra Linne, Allyson Morris, Tina Williams, Erica Memmer.

2015 SURE Fellows in Chemistry and Physics	Research Advisor
Stephen Jones	Rick Fitch
Allyson Morris	Rick Fitch
Zachary Parksey	Rick Fitch
Rick Wyatt	Rick Fitch
Taylor Gabbert	Bill Flurkey
Patrick Cheek	Eric Glendening
Rebecca Rudisell	Eric Glendening
Kadijah Evans	Rob Noll
Destiney Hughes	Rob Noll
Christopher Rodgers	Rob Noll
Allison Schoenberg	Rob Noll
Gregory Gallagher	Joe West
Phillip Ingalls	Joe West
Shan Antony	Guoping Zhang
Arick Gardner	Guoping Zhang
Tanner Latta	Guoping Zhang
Anthony Rosado	Guoping Zhang
Nathaniel Shanklin	Guoping Zhang

Fourth Row (L-R): Anna Walls, Haley Gravely, Michael Ehler, Christopher Rodgers, David McLennan, Matthew Hall, Nicole Hostetter. Last Row (L-R): Dr. Catherine Stedding, Eric Hibbets, Mark Sikora, Arnan Rahmatullah, Dr. Eric Glendening, Jeff Latka, Dr. Rusty Gonser, Cody Leasor, Dr. Guoping Zhang, Hunter Lavoine, Olayinka Olowoyeye, Dr. Steve Wolf, Alexander Penry. Not pictured: Nicholas Clark, Dr. Jeff Kinne, Dr. Steve Templeton.

Students Present their Research Projects

Local & Regional Meetings

Chemistry majors presented posters or gave oral presentations at the following meetings during the past year:

Fall Expositum, ISU's celebration of student research and creativity, Oct. 22, 2014 (Lola Akinlaja—with Prof. Noll).

Mid-America Prosperity and Security (MAPS) Conference, Indiana State University, Sept. 12, 2014 (Lola Akinlaja—with Prof. Noll).

National APS Meeting

Two physics majors, **Tanner Latta** and **Christopher Rodgers**, presented work done with Prof. Zhang at the American Physical Society meeting March 2-6, 2015, in San Antonio, Texas.

National ACS Meeting

Three chemistry students, **Lola Akinlaja** (with Prof. Noll), **Tulsı Vaid** (with Prof. Glendening), and **Anna Walls** (with Prof. Fitch), presented posters at the 249th National American Chemical Society Meeting in Denver, Colorado, March 22-26, 2015.



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



ISU Department of Chemistry and Physics Newsletter

All our newsletters are available *electronically* at the alumni link on the **NEW** Department of Chemistry and Physics website:

http://cms.indstate.edu/cas/chem_phys

We want to hear from you!

Please send us your updates for inclusion in the "Alumni Notes" section of the newsletter. Send an email to Jennifer Inlow (jennifer.inlow@indstate.edu) or complete the form on the insert and mail it to the Department.

Questions or comments?

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