

Department of Chemistry and Physics Newsletter

Summer 2017

Highlights from the 2016-2017 Academic Year

- Online chemistry and physics courses offered—see page 3.
 - New B.A. option for Chemistry degree—see page 3
 - Twelfth year of SURE program—see page 5.
 - Faculty and students utilize new 3D printer—see page 2.
 - Awards received by students and faculty—see page 3.
 - New chemistry instructor joins the faculty—see page 2.
 - Department engages with students and alumni via Facebook. Please follow us at: <https://www.facebook.com/isuchemphys/>
- The Department conducted chemistry and physics demonstrations for local residents as part of the ISU College of Arts and Sciences **Community Semester: Night at the Museum**, a family-friendly event held in the Science Building last March. It featured hands-on activities organized by all the science departments in the building and was co-sponsored by the Vigo County Library.



At right: Chemistry majors Stephan Harruff and Liam Brown make liquid nitrogen ice cream during Night at the Museum.

Corridor Renovations Continue in the Science Building

Corridor renovations began on the first floor of the Science Building (where Physics is located) in the spring of 2016 and were completed by the start of the Fall 2016 semester. Lighting and flooring were replaced, significantly brightening and modernizing the halls. Several large LED monitors and kiosks designed to display departmental announcements, events, and research summaries were added in key locations to catch the attention of passing students. Walls were moved in two locations to open up space for small study lounges. Another student study area was added in the space just outside the Physics faculty offices. Second-floor corridor renovations are currently underway and should be completed by mid-August. Corridor renovations in the basement (where Chemistry is located) are tentatively scheduled for summer 2018.



New student study lounge at south end of Science Building



Study area near Physics offices

Faculty Profile: Kendra Dewese

This past fall the Department welcomed Kendra Dewese as a new Instructor of Chemistry. Kendra grew up in Lancaster, Ohio, and she attended Cedarville University (near Dayton, OH) where she earned a B.S. in Chemistry. She then attended The Ohio State University for her graduate work under Prof. T.V. RajanBabu studying cobalt-catalyzed reactions. Late last summer she defended her dissertation and two days later moved to Terre Haute to join the Department.

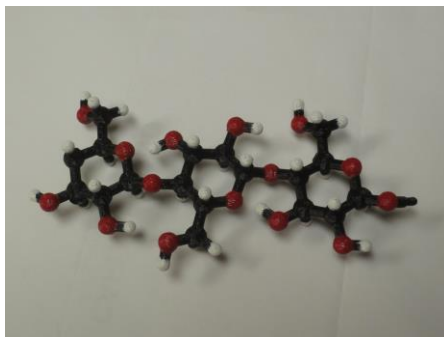
In her first year at ISU, Prof. Dewese taught Organic I (CHEM 351) in the fall and Foundational Studies Chemistry (CHEM 100) in the spring. Although she had been a graduate teaching assistant for organic chemistry courses at Ohio State, this was her first time teaching an introductory chemistry course for non-science majors. This spring she undertook the task of developing and filming a laboratory safety video, with ISU Chemistry majors as the actors. The Department intends to use the video as part of the mandatory safety training all students in laboratory courses receive. Prof. Dewese has enjoyed getting to know her students and colleagues and says she is "grateful to have joined such an amazing department!"



Professor Kendra Dewese

Students and Faculty Work with 3D Printer

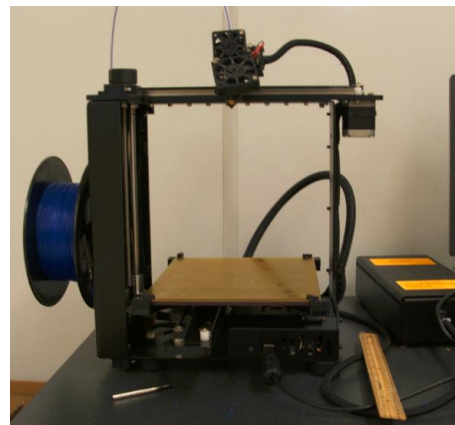
In the spring of 2016 the ISU Department of Earth and Environmental Systems (EES) purchased a MakerGear M2 three-dimensional printer, and since then the printer has been used by faculty and students from a variety of disciplines, including Chemistry and Physics. Two students, Amy Watts and Gage Golish, worked under the direction of Prof. Joe West (Physics) to set up the printer and master its use during the 2016 SURE program. Objects printed so far include wing surfaces for an experiment in an advanced physics lab course, biochemical molecular models for Prof. Inlow, custom equipment for Prof. Noll's research program, and a reproduction of a fossilized skull for an EES course. Michelle Baltz-Knorr has also been using the printer to make ramps which were used in the new online PHYS 105 Lab course. (See page 3 for more information about the Department's new online course offerings.)



Molecular model of cellulose



Model of fossilized skull



New three-dimensional printer

Recent Publications by the Faculty

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

R. Fitch: *Journal of Chemical Education.*

W. Flurkey: *Biochemistry and Molecular Biology Education.*

E. Glendening: *International Reviews in Physical Chemistry.*

J. Inlow: *Biochemistry and Molecular Biology Education.*

B. Mikula: *Physical Review Physics Education Research.*

R. Noll: *Journal of Chemical Education.*

G. Zhang: *Applied Physics Letters; EPL; Journal of Physics: Condensed Matter; Modern Physics Letters B; npj Quantum Materials; Physical Review A.*

Nineteen Students Receive Chemistry and Physics Degrees

Sixteen students graduated with **chemistry majors** in August, December, or May of the past academic year: Evan Alexander, David Enteman, Nathan Bedeck, Patrick Cheek, Joseph Frey, Nicole Hostetter, Dustin Hunter, Cody Leasor, Molly McLean, Derick Minick, Carly Nash, Chineze Onu, Zachary Parksey, Zackery Piehl, Clayton Stoutenour, and Jerry Strahle. The three graduating **physics majors** this year were Tanner Latta, Adam Pickrell, and Nathaniel Shanklin.

Outstanding Chemistry and Physics Graduates Recognized

Nicole Lynn Hostetter was selected as the 2017 P.D. Wilkinson Outstanding Senior Chemistry Major. Nicole is the daughter of Vida Troutman and stepdaughter of Jeff Troutman. She graduated from Jasper High School in 2013. In the fall of 2013, Nicole came to ISU as a Presidential Scholar. She has been active with the American Chemical Society, Residential Life, and Sigma Kappa sorority. Nicole also studied abroad in Ireland in the summer of 2015. She has served both the Chemistry and Physics programs at ISU as a supplemental instructor, a laboratory assistant, and a Help Center tutor. Nicole received a Stanley Scholarship and the Outstanding Modern Physics Student Award recognizing her achievements in chemistry and physics. She graduated with honors with a chemistry major and physics minor. Nicole will be attending Clemson University beginning in August 2017. She plans to pursue a doctorate in chemistry with the intention of becoming a college professor.

Nathaniel Shanklin was selected as the 2017 Outstanding Graduating Senior Physics Major. Nathaniel is the son of Melissa and Richard Larsen. He graduated from Terre Haute South High school in 2013 and came to Indiana State University in the fall of the same year. Nathaniel has served the Physics program at ISU as a laboratory assistant and Help Center tutor. He received a Stanley Scholarship, the John McCarthy Outstanding Junior award, and the Outstanding Graduating Senior Award recognizing his achievements in physics. He also participated in the Summer Undergraduate Research Experience (SURE) program under the mentorship of Prof. Joe West and presented the results of his research at the American Physical Society March meeting in 2017. Nathaniel graduated in May with a physics major and computer science minor and plans to broaden his experience and skills in order to find a career he enjoys.

Chemistry Instructor Amila Jeewandara is Promoted and Receives Teaching Award

Amila Jeewandara joined the Department in August 2011 as an Instructor of 100-level chemistry laboratories. Due to her good rapport with students and positive student evaluations after her first year of teaching lab courses, Prof. Jeewandara was assigned to teach lectures for General Chemistry (CHEM 105) and Foundational Studies Chemistry (CHEM 100). In 2014 she developed and taught the new Preparatory Chemistry course (CHEM 101) intended for students who need to take General Chemistry but aren't yet prepared for that course. This spring Prof. Jeewandara was among ISU's very first cohort of Instructors who were promoted to Senior Instructor, a status requiring at least six years of teaching at ISU. Prof. Jeewandara also received the 2017 College of Arts and Sciences Excellence in Teaching Award. This honor is given each year to an Instructor or Lecturer who has "demonstrated commitment to and tangible evidence of excellence and effectiveness in teaching in ways that are organized, creative, challenging, and motivating."

Prof. Jeewandara is originally from Sri Lanka and has a Ph.D. in physical chemistry from the University of Nevada at Reno.



Professor Amila Jeewandara

Department Now Offers Online Courses

This spring the Department debuted online versions of PHYS 105 & 105L, taught by Joe West and Michelle Baltz-Knorr, and CHEM 100 & 100L, taught by John Moody. For these first offerings of the courses, class size was kept small (15-20 students) and enrollment was restricted to Distance Education students. For the lab courses, students purchased prepackaged kits containing all the necessary equipment and reagents and carried out the experiments in their homes. Michelle-Baltz Knorr designed and prepared a customized kit for PHYS 105L so that students in the online course performed the same experiments as students in the in-person course. Plastic ramps that were included in the kits were produced at low cost

using the new 3D printer (described on page 2). Online CHEM 100/100L is being offered again this summer and fall.

New B.A. Option for Chemistry Degree

Students majoring in chemistry now have the option of earning either a Bachelor of Arts or Bachelor of Science degree. The new B.A. option is designed for students who wish to combine their interest in chemistry with a major or minor in another discipline, pursue secondary teaching opportunities, or enroll in a professional program in the medical or health sciences. The B.A. in Chemistry requires fewer total credits (52 credits) than the B.S. (69 or 75 credits).

Faculty Briefs...

Chemistry:

Kendra Dewese completed her first year in the Department as a new organic chemistry instructor, having taught Organic I and Foundational Studies Chemistry (see her profile on page 2). **Rick Fitch** has been on sabbatical this past year and has been busily working with the new mass spectrometer on projects involving poison frogs and birds. This summer he is working with seven SURE students on these projects and finishing up several papers. **Bill Flurkey** just became a grandfather for the second time. This summer he had some “down time” after eye surgery to correct a vision problem in his left eye. **Adrienne Gilbert** attended a teaching conference in early June and is teaching CHEM 106 this summer. This is a new challenge as it is her first time teaching this course. **Eric Glendening** is busy preparing for his daughter's wedding which will be in October. **Jennifer Inlow** did some travelling this spring to visit her nieces and nephews in South Dakota and Texas. She is continuing her research on kombucha tea during the SURE program this summer. **Amila Jeewandara** was promoted to Senior Instructor status and received a teaching award from the College of Arts and Sciences (see page 3 for details). **John Moody** developed the new online version of CHEM 100 and 100L (Foundational Studies Chemistry with Lab) and taught the course for the first time this spring (see page 3 for a description of the Department's new online courses). **Rob Noll** is working with a SURE student this summer to further explore the suitability of a small, portable gas chromatograph for use in field detection of organic compounds. **Larry Rosenhein** is working this summer on metal isocyanide compounds from a class of isocyanides that do not have an offensive smell and that can be made in undergraduate lab courses. **Eulsun Seung** and nine of her Science Education students organized a “Science Afternoon”

event for the Terre Haute Boys and Girls Club last November. The kids had a fun time! **Ryan Van Hoveln** just completed his second year in the Department. During the past year, he worked with students in the SURE program, traveled to Ecuador with Timmy Global Health on a medical brigade, and presented his research with students at the National ACS Meeting in San Francisco (see page 5 for a photo of the group at the ACS meeting).

Physics:

Valentina French taught Modern Physics I and II for the first time this past year, since Prof. Zhang (who usually teaches these courses) was on sabbatical. As usual, she is teaching PHYS 105 this summer. **Brendon Mikula** took over as head coach for the Terre Haute North High School Science Olympiad team. This year they went to the state tournament for the second year in a row. He is getting married this summer and going on a tropical honeymoon. **Joe West** is working with a SURE student this summer on a project involving rolling polygons and granular materials. This spring he taught an online version of PHYS 105 for the first time (see page 3 for a description of the Department's new online courses). **Guo-ping Zhang** had a productive sabbatical during the 2016-17 academic year; he published a number of papers (see page 2) and sent a student to the APS March meeting (see page 5).

Retired Faculty Briefs...

Retired members of the chemistry faculty who still reside in Terre Haute meet monthly for a pizza lunch with current chemistry faculty. The retired faculty who regularly attend include **Rich Kjonaas**, **Marlow Owen**, and **Pat Tatum**.

Staff Briefs...

Patti Archer took a vacation to Virginia Beach with her sister this summer. She enjoyed the ocean

and historical sites and had a great time overall. **Mitzi Nichols** went to Cabos San Lucas in December with friends from her ISU college days. She reports that it was a wonderful trip and a beautiful place to visit in December. Over the past year, **Michelle Baltz-Knorr** developed an online version of PHYS 105 Lab and taught it for the first time this spring (see page 3 for details about the Department's new online courses). **Erik Ingebrigtsen** took a vacation to Washington, D.C., where he visited the Washington Monument, the Lincoln Memorial, the Veterans Memorial, and several of the Smithsonian Museums. He reports that he had a great time!

Alumni Notes...

Dorothy Clements (BS, '60; MS, '63) of Bargersville, IN, is retired from 37 years of teaching math at Center Grove High School. She also taught chemistry and physics for several years and still substitute teaches math, chemistry, and physics. Her granddaughter and grandson are 2016 and 2017 graduates of ISU.

Wayne L. Shaw (Chemistry BS, '87) resides in San Antonio, TX, and was recently nominated by the two-star 24th Air Force commander for membership on the Air Force Scientific Advisory Board. He ultimately wasn't selected, but is hoping to be selected next year. He says “Thanks ISU for some great memories and a great undergrad experience!”

Joseph R. Compton (Chemistry BS, '12) married his wife, Karen, in 2013. They have a two-year old son, Eliyahu. They reside in Chicago where Joseph is working on a Master of Divinity degree at Moody Bible Institute. He writes “I still love chemistry, and I cherish the fantastic education I received from the Chemistry Department.”

Summer Undergraduate Research Experience Continues for 12th Year

The 2017 Summer Undergraduate Research Experience, or SURE Program, began in mid-May. The ongoing program, which is now in its 12th year, provides ISU students an opportunity to participate in an intensive research experience under the direct supervision of a faculty advisor for 10 weeks during the summer. Participating SURE students receive SURE fellowships and spend their time principally in the laboratory, though considerable time is also devoted to reading the scientific literature, as well as discussing their progress with their peers and faculty in a series of weekly group meetings. This summer 46 students are working under the mentorship of 18 faculty advisors from Chemistry, Physics, Biology, Computer Science, Geology, and Applied Medicine. Eighteen of these students (listed in the table) are working with eight

faculty members in the Department of Chemistry and Physics. Congratulations to all of these students for being selected!

2017 SURE Fellows in Chemistry and Physics	Research Advisor
Nicholas Andreasen	Rick Fitch
Kimberly Gleason	Rick Fitch
Ryan Sanders	Rick Fitch
Richard Wyatt	Rick Fitch
Jacqueline Smith	Rick Fitch
Juan Nysschen	Eric Glendening
Rebecca Rudisell	Eric Glendening
Kaitlin Applegate	Jennifer Inlow
Jason Hughes	Rob Noll
Trent Carpenter	Ryan Van Hoveln
Stephan Harruff	Ryan Van Hoveln
Brandon Mikesell	Ryan Van Hoveln
Brogan Thomas	Ryan Van Hoveln
Sidney Eckert	Joe West
Joshua Covert	Steve Wolf
Michael Bennett	Guoping Zhang
Andrew Brisbin	Guoping Zhang
Tyler Jenkins	Guoping Zhang

Students Present their Research Projects

Chemistry and Physics majors presented posters at the following meetings during the past year.

NCUR Meeting

Three chemistry students (**Patrick Cheek**, **Star Leonard**, and **Rebecca Rudisell**) presented posters at the National Council on Undergraduate Research Conference in Memphis, TN, April 6-8, 2017.

Local & Regional Meetings

ISU Fall Exposium, ISU's celebration of outstanding academic work put on by the Center for Student Research and Creativity, Sept. 14, 2016 (All SURE participants presented posters at the Fall Exposium).

ISU Spring Exposium, Apr. 10, 2017 (**Joshua Covert**—with Prof. Rosenhein, and **Patrick Cheek**, **Joseph Frey**, **Jason Hughes**, and **Cody Leasor**—all with Prof. Noll).

13th Annual Interdisciplinary Research Collaborative Undergraduate Research Symposium at Rose-Hulman Institute of Technology, Terre Haute, IN, Oct. 28, 2016 (**Joshua Covert**—with Prof. Rosenhein, and **Joseph Frey**—with Prof. Noll).

National ACS Meeting

Patrick Cheek, **Joseph Frey**, **Juan Nysschen**, **Rebecca Rudisell**, and **Brogan Thomas** presented posters at the 253rd National American Chemical Society Meeting in San Francisco, CA, April 2-6, 2017. The students' research mentors were Profs. Glendening, Inlow, Noll, and Van Hoveln.

National APS Meeting

Two physics majors, **Nathaniel Shanklin** and **Zachary Babyak**, presented oral presentations of their work done with Profs. West and Zhang, respectively, at the American Physical Society meeting March 13-17, 2017, in New Orleans, LA.



Prof. Van Hoveln and students at the National ACS Meeting in San Francisco last April.

Thanks to the ISU Center for Student Research and Creativity, the ISU College of Arts and Sciences, and the Wabash Valley Section of the ACS for funding the students' travel to these meetings.

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ISU Department of Chemistry and Physics Newsletter

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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?

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