



Chemistry & Physics News

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New Faces:

- The Chemistry and Physics Department is proud to welcome **LIZA NEGRON-PEREZ**, an ASU alum, as our new laboratory technician. She really hit the ground running this year, especially with the huge task of situating and maintaining the new NMR.
- **DR. CHRISTIAN POPPELIERS** joined the department in Fall 2008 as our new Geophysicist. He will teach geology and advanced courses in both mathematical and computational methods. His research with undergraduates is in the areas of seismic imaging and digital signal processing. He received his bachelors degree from Purdue University. His PhD degree was earned at Indiana University.
- **DR. TRINANJAN DATTA** is our newest tenure-track hire. He is trained in theoretical solid state physics and is quickly establishing an active undergraduate research group. He will teach a variety of advanced physics courses as well as introductory physics and physical science. Dr. Datta received his PhD in Physics from Purdue University.

Augusta State University

<http://www.aug.edu/chemphys>

Spring 2008

Letter From the Chair



I am pleased to introduce our new publication 'Chemistry and Physics News'. With so many exciting things happening in the department we felt the need to spread the word.

In the past three years, we have hired two new chemists and three new physicists. These young faculty members have brought a great deal of energy to our growing department. The entire department continues to be dedicated to providing an excellent undergraduate experience for our stu-

dents. We do this through teaching excellence, careful mentoring, and by providing opportunities for undergraduate research.

We are excited about our new state-of-the-art 300MHz Nuclear Magnetic Resonance Spectrometer we acquired about six months ago and our new Computational Physics Laboratory which, in only a few months, has gotten a great deal of use from not only chemistry and physics majors, but also by students in computer science and mathematics.

It pleases me to say that both our chemistry and physics programs are growing. Most of our

advanced chemistry courses are at their maximum capacity and we recently had seventeen students enrolled in one of our advanced physics courses! If you visit the department on almost any afternoon, you will see our research laboratories bursting at the seams. All of this progress is the result of the dedicated efforts of the talented faculty that are the core of the department. I am confident that good times lie ahead.

As always, I encourage you to communicate with us, either via email (jhauger@aug.edu) or other, more traditional routes!

- Dr. Andy Hauger

Grants

DR. CHRISTIAN POPPELIERS was awarded a \$51,000 grant from the National Science Foundation's Major Research Instrumentation—Earth Science Program. This grant allowed the department to buy an 8-node Apple cluster computer which has already been used in various computational physics research experiments.



DR. CHAD STEPHENS was just awarded a grant of \$18,975 from the HHV-6 Foundation for his work on the development of new HHV-6 (Human Herpes Virus 6) inhibitors. This work is being done in collaboration with Dr. Lieve Naesens and Dr. Erik De Clercq at the Rega Institute in Belgium, with whom the grant is shared. Finalization of the grant details are in progress.



Announcements

Departmental scholarships are given to two chemistry majors each year. The recipients for the 2008–2009 school year are Lindsay Hilbert, receiving the Dr. & Mrs. J. Gray Dinwiddie Scholarship, and Daniel Sweat, receiving the Richard Timothy Mixon Scholarship.

Two \$100 book scholarships, donated by textbook publishers, were also awarded to two random undergraduate research students this year. Those recipients were Ashwin Devendiran and Gary Schwarz.

Are you a chemistry or physics major interested in research?

Have you seen the research posters hanging on the walls and thought to yourself, "I'd like my name to be on one of those"? Make an appointment with one of the professors who you would like to do research with and get the ball rolling! Undergraduate research is a must for those planning on attending graduate school!

The new chemistry & physics tutoring program has gotten off to a great start! This is a free service, made possible by the department, for students needing extra help in their chemistry & physics classes. Tutoring times change each semester, according to the student tutors' schedules, so make sure to check the tutoring schedule each semester. These schedules can be found on our website and posted on billboards around the 3rd floor of the Science Building.



The new 300 MHz NMR, obtained from the Georgia Bureau of Investigation, has proven quite useful in not only the many ongoing undergraduate research projects, but also in spring semester upper-level Chemistry classes such as Advanced Organic Chemistry and Heterocyclic and Transition Metal Chemistry.

This NMR allows us to perform many more of the advanced NMR techniques, and fluorine NMR is now possible as well with this instrument.

The acquisition of this NMR was made possible by funding from the ASU Foundation and support from the Pamplin College of Arts and Sciences.

Chem Club

In November, the ASU Chemistry Club and faculty hosted its 12th "Wow! That's Chemistry?" show for local 6th graders. There was smoke, fire, and even a choreographed dance routine by the two chemistry club presidents! This time, we were (somehow) able to leave the Maxwell PAT in one piece.

The club was also involved in judging science fair projects at Hephzibah and North Harlem middle schools this year. Members of the club as well as some of the faculty from the department were involved. Feedback was left on the projects to help guide the students and teachers for future projects.

Faculty & Student Recognition - Honors Convocation 2008

Students

KEN STEPHENSON, junior chemistry major, received the *John W. Pearce Award in Organic Chemistry*. His award was presented by Dr. Stephens.

JULIE HATFIELD, graduating senior chemistry major, was recognized for completion of her thesis, "*Electrophilic Fluorination of 2,5-Diphenylthiazole Using Various N-F Reagents*," under the direction of Dr. Stephens.

DAVID SCHULTE, graduating senior chemistry major, received the *Richard T. Mixon*

Award in Chemistry. His award was presented by Dr. Crute.

DANIEL GERRY, graduating senior chemistry major, received the *Best Undergraduate in Research Chemistry Award*. His award was presented by Dr. Stephens.

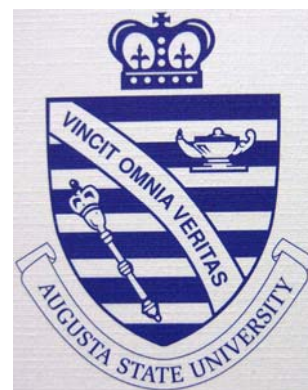
Faculty

DR. CHAD E. STEPHENS, Assistant Professor, was awarded the *ASU Louis K. Bell Research Award* for his outstanding contributions in research and scholarship.

DR. ERIC J. ZUCKERMAN, Asso-

ciate Professor, was inducted into the *Phi Kappa Phi Honors Society* this year.

Congratulations to our students and faculty! We are so proud of you!



Research Presentations & Trips

In October, a group of chemistry students presented 4 different posters on their research



led by Dr. Stephens at the 2007 SERMACS (Southeast Regional Meeting of the American Chemical Society) in Greenville, SC.

Presenting students included Carlos Griswold, Matt Hinnant, Eddie Parikh, and Daniel Sweat. Dr. Stephens also presented a talk on his group's fluorine chemistry research.

In February, Dr. Zuckerman gave a POGIL (Process Oriented Guided Inquiry Learning) workshop to a group of 30 faculty at Albany State University.

In March, a group of 5 students, led by Dr. Stephens, attended a 1-day Instrumental Colloquium hosted by the Department of Chemistry at the University of Alabama. They toured the various instrumental labs and saw firsthand how each instrument is operated.

Student and Departmental Highlights

JOSEPH BANNING, graduating senior chemistry major, has been accepted to the PhD in Chemistry program at the University of Kansas. He will begin his research there this summer.

Congratulations to **DANIEL SWEAT** and **DR. STEPHENS** for having their paper on tellurophene chemistry accepted for publication in the *Journal of Organometallic Chemistry*. Daniel has also been accepted to a SURP (Summer

Undergraduate Research Program), one of the NSF-funded REU (Research Experience for Undergraduates) programs around the country. He will be working with Dr. Silas Blackstock at the University of Alabama researching organic electronic materials.

This spring was the first time the CHEM 4990 course, Heterocyclic and Transition Metal Chemistry, was offered and taught by Dr. Stephens.

Next spring, Dr. Myers will be teaching the 4990 course on Forensic Chemistry, also the first time this course will have been taught at ASU.

Trivia: What do the drugs Ambien, Celebrex, Cipro, Claritin, Lipitor, Penicillin, Plavix, Prilosec, Singulair, and Taxol have in common?

Answer: They all contain heterocyclic rings!

Students & Faculty Present Research Projects, Receive Honors

Last March was a busy time for several of ASU's Chemistry and Physics Department students and professors.

At ASU's Honors Convocation, two physics students received top honors. Michael W. Nadolsky, a senior, received an award from the American Nuclear Society, and Rebecca L. Sawyer, a junior, was given the "Best Undergraduate Research in Physics" award.

At the March meeting of the Georgia Academy of Sciences in Jacksonville, FL, projects were presented to attendees from colleges throughout Georgia and Florida.

Rebecca Sawyer presented her research project "A Computational and Experimental Study of the Vacuum Cannon."

Michael Nadolsky and John Allison gave a talk on the "Practical applications for a one-dimensional geophysical resistivity apparatus: Field tests and numerical simulation."

Anthony Zamberlan gave a poster presentation of his research, "A group theoretical study of multiferroic compounds."

For their geological discussion, Nadolsky and Allison received the "Best Talk in Geo-

sciences" award.

Dr. Datta attended the American Physical Society meeting in New Orleans to deliver a talk on "A theory for the multiferroic compound LiCu_2O_2 ."

Dr. Poppeliers also gave several talks. Two were given in Denver, CO to the Geological Society of America about ongoing research of the geomagnetic characteristics at Big Bend, TX. Other talks were presented here at ASU on signal processing and undergraduate research.

Great job, guys! You represent our department so well!



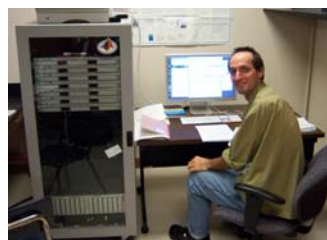
Students and faculty traveled to Jacksonville, Florida this year to participate in the Georgia Academy of Sciences annual meeting.



Rebecca Sawyer and Michael Nadolsky were presented with awards at this year's ASU Honors Convocation.

New "Supercomputer" Allows for Exploration of Seismic Activity

The department's recently acquired Apple 8-node cluster computer is the latest addition to its growing arsenal of research tools.



The computer, obtained with funds provided by a National Science Foundation grant, has already enhanced ongoing undergraduate geophysical research.

Dr. Poppeliers says the computer has the ability to take a very large equation and divide it into eight smaller, more manageable pieces. This dramatically cuts down on computer processing time.

Undergraduates Michael Nadolsky and John Allison's talk at the Georgia Academy of Sciences meeting would not have taken place had it not been for the new computer.

Dr. Poppeliers plans on using the computer to further his research on seismic wavefield propagation and geomagnetic imaging.

Physics Club

The Physics Club has done an excellent job of setting up a recycling station on the third floor of Science Hall. Paper, aluminum cans, and plastic were collected in bins outside Dr. Tom Colbert's office and then recycled to keep our campus green.

The club unveiled their newly-designed t-shirts this semester, however, there has been talk of yet another design for the fall coming fall semester.

Last Thanksgiving, the club also sponsored a "Can Roll" food drive. They managed to raise over 700 pounds of food for the Harvest Food Bank.

Great job, Physics Club!

Upcoming Physics Trips

This August Dr. Poppeliers and several students will be conducting a geophysical survey of geomagnetic characteristics in Big Bend Texas.

Generous Donation Makes Physics Lab Upgrade Possible

Last fall, the Washington Savannah River Company graciously donated \$50,000 to the Chemistry and Physics Department.

According to Dr. Hauger, department chairman, the money was spent on new equipment and software such as Labview, MATLAB, multifunction data acquisition devices, introductory laboratory equipment, and

advanced optical laboratory equipment. All computers in the Computational Laboratory were replaced.

The new lab provides students the opportunity to work on course projects and any ongoing computational research.

We are so thankful for this donation which allows for the furthering of our research and teaching capabilities.



Freshman Meet & Greet

Last fall, a luncheon was hosted by the department for chemistry & physics freshmen and new transfer students. At this meeting, the freshmen were able to learn a little bit about the department, their professors, and future research opportunities. The Meet & Greet was such a success that we plan to have one at the beginning of both fall and spring semesters from now on.

New Department Website

The new departmental website is up and running! Find lots of departmental information, including this newsletter, the tutor center schedule, faculty contact information, research projects, and more!

<http://www.aug.edu/chemphys>

Seminar Speakers

Dr. Joe Thrasher, from the University of Alabama, visited in October and gave a talk on his SF₅ chemistry. He also gave students some information about preparing for graduate school.

Dr. Victoria Geisler from the University of West Georgia visited our campus in January and gave a talk about her department's NSF grants for improving chemistry education.

Dr. Zhen Huang, from Georgia State University, visited in February. He gave a talk on his research on the function and properties of nucleic acids.

Dr. Stewart Schneller, a medicinal chemist from Auburn University, gave the keynote presentation for the Phi Kappa Phi Research Day Conference in March. His talk was about the Ebola virus and the development of new treatments for it.

Dr. Bruce Bursten, incoming president of the American Chemical Society, gave a talk at the local ACS meeting in March held in the JSAC. He focused on the necessity of chemical education training for K-12 teachers with the goal of enhancing the expertise of future generations of those teaching chemistry at college and university levels. He also talked about the need to educate the public, especially legislators, about the central role that chemistry has in solving problems and facing challenges in society. It was an honor to have the ACS president-elect speak at our school.

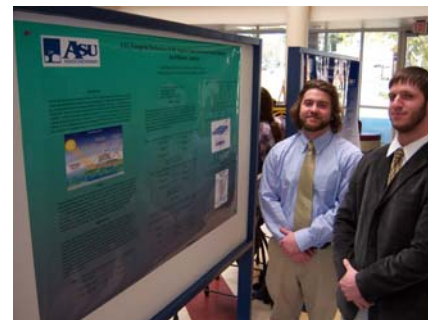
Thank you, seminar speakers!

Phi Kappa Phi Research Symposium 2008

This year, the ASU Chemistry and Physics department had several students present their research at the 2008 Phi Kappa Phi Honors Society Research Symposium held on campus.

The following is a list of the students and projects:

- Brandon Hammond, Jeramy Barry; "CO₂ Footprint Reduction of the ASU Science Building" Advisor: Dr. Busch
- Anthony Zamberlan; "A group theoretical study of multiferroic compounds" Advisor: Dr. Datta
- Michael Nadolsky, John Allison; "Practical applications for a one-dimensional geophysical resistivity apparatus: Field tests and numerical simulation" Advisor: Dr. Poppeliers
- Rebecca Sawyer; "A Computational and Experimental Study of the Vacuum Cannon" Advisor: Dr. Hauger
- David Schulte; "Identification of a Streptomycete Possessing Antimicrobial Properties" Advisor: Dr. Andrus (Biology)
- Robin Giesecking; "Distribution of Lead in Radishes Grown in Contaminated Soil" Advisor: Dr. Crute
- Daniel Sweat; "Synthesis of Tellurophene and Stille Couplings of the Tin Derivatives" Advisor: Dr. Stephens
- Whitney Jones; "Dating Communities by Soil Lead Content" Advisor: Dr. Crute
- Joseph Banning; "Variable Chemoselectivity in the Nitro Reduction of 1-(Cyanomethylsulfonyl)-2-Nitrobenzene" Advisor: Dr. Stephens
- Aditya Parikh & Paul Howell; "Synthesis of 2-Amino-3-cyanofuran and -pyrrole Using Sonication or Microwave Radiation" Advisor: Dr. Stephens
- Jason Eades, Matt Hinnant, & LeAnn Walton; "Nuclear Fluorination of Various 1,3,5-Triphenylpyrazoles with NFS" Advisor: Dr. Stephens



Brandon Hammond and Jeramy Barry with their poster from the PKP research symposium.

