

AUBURN UNIVERSITY
Journey
The College of Sciences and Mathematics 2008



A
PERFECT
STORM?

ENERGY IN
THE 21ST
CENTURY:
COSAM ALUM IS
CHARTING THE
COURSE



AUBURN
UNIVERSITY

I M A G I N E . . .



Above: Stadshuset on Kungsholmen (Town Hall on King's Island) built between 1911-1923 in Stockholm, Sweden where the annual Nobel Prize banquet is held with the royal family.

"Imagine a COSAM faculty member receiving a telephone call from Sweden and hearing the words, 'You have been chosen to receive the Nobel Prize.'"

— Dean Stewart Schneller



COLLEGE OF SCIENCES
AND MATHEMATICS

MESSAGE

From the Dean



Imagination: The Acorn From Which Creativity Grows

You can't outsource imagination; you can't Google imagination. You might find someone else's imagination on YouTube, but imagination is uniquely personal.

Albert Einstein once said, "Logic will get you from A to B. Imagination will take you everywhere."

When do we first encounter our imagination? Children's stories? The best gift a child can receive is the opportunity to imagine great things. That is when we are beginning to stock our toolbox for an enriching and fulfilling life of adaptability and achievement.

Fairy tales (stories dealing with imaginary, supernatural beings) were born of oral tradition with no particular authors; they grew with each telling. After the Brothers Grimm collected them, it was still customary to read them to children without illustrations so their imagination could set the scene and color the characters: Little Red Riding Hood, Hansel and Gretel, Cinderella, Sleeping Beauty, Snow White, Rumpelstiltskin, and the Goose that Laid the Golden Eggs.

Recent popular sagas have been built on the creator's imagination: "Star Trek: The Next Generation," "Back to the Future," "Fantastic Voyage," and Harry Potter's adventures.

There is also the recent book, "The World Without Us" by Alan Weisman, that imagines what planet earth would be like without humans.

Growing up I listened to the radio...bringing in far-away stations, looking at a map and seeing where distant cities were located. As I listened more and more, my imagination would construct those places. Then, as I grew older and visited some of those cities, they weren't quite like I had imagined, but I felt a familiarity that came from a "second" visit.

Einstein also said, "Imagination is everything. It is the preview of life's coming attractions."

As he pondered gravity and light and time and motion, he developed mental pictures to make his theories come alive.

Science and mathematics are a creative and imaginative pursuit, no less than poetry and music. Science helps us remain in touch with that child-like curiosity to wonder about things as ordinary as moonlight and radio — they seem to come from nowhere. As you read this issue of *Journey* each page will illustrate how COSAM people, at various stages in their journey, began by calling on their imagination to take them to a destination.

We are all familiar with the English proverb that states, "Great oaks from little acorns grow." This could be restated: "meaningful experiences from imagination grow." I am reminded of the Toomer's oak at the entrance into the University. It is here where the Auburn experience begins for students and grows into the oaks of their grand accomplishments.

A handwritten signature in cursive script that reads "Stew Schneller".

Stew Schneller
Professor of Chemistry and Biochemistry
and Dean

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COSAM

Mission Statement

The mission of the Auburn University College of Sciences and Mathematics is three-fold: to *teach* by providing an environment that ensures excellence in the biological, physical, and mathematical sciences for the purpose of preserving, interpreting, and conveying existing knowledge; to *research* by creating, integrating, and applying new knowledge; and to *reach out* to others by fostering educational exchange within the university, the Alabama community, and society as a whole.

- Dean and Professor
Stewart Schneller
- Associate Dean for Academic Affairs
Larry Wit
- Associate Dean for Research
Marie Wooten
- Associate Dean for Diversity and Multicultural Affairs
Velma Becton Richardson
- Director of Development
Tammy Beck Hartwell '81
- Director of Development
Sherri Rowton 90
- Editor
Timothy Meeks 91
- Associate Editor
Candis Hacker 97
- Graphic Designer
Candis Hacker
- Photographers
Timothy Meeks, Candis Hacker & Carol Nelson
- Contributing Writer
Carol Nelson

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Inquiries, suggestions and news items concerning *Journey/Spectrum* should be directed to:

Timothy Meeks
315 Roosevelt Concourse
Auburn, AL 36849
or
meeksta@auburn.edu

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The Auburn University College of Sciences and Mathematics is committed to providing opportunities of inclusion for its faculty, staff and students. For more information on the Auburn University College of Sciences and Mathematics, visit www.auburn.edu/cosam.

MESSAGE

From the President

Jay Gogue

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Trust many of you already know that Auburn is in the process of developing a strategic plan that will set our goals in 10 major categories for the next five to 10 years. The categories are: undergraduate education; research and graduate education; faculty retention and development; employee retention and development; infrastructure and facilities; alumni engagement; development; image and reputation; international engagement; and miscellaneous.

As we near the end of the planning stage and begin with the implementation, I continue to be boldly optimistic about the future of Auburn University, because the strategic plan will further enhance the outstanding programs, policies, faculty, and student body here on “the loveliest village.”

Others are also noticing Auburn’s assets. For the second year in a row, a Harvard-based educational collaborative rated Auburn University among the best workplaces in America for tenure-track junior faculty.

In a survey of workplace conditions for faculty working toward tenure, the Collaborative on Academic Careers in Higher Education at Harvard’s Graduate School of Education rated AU as “exemplary” in three categories: tenure practices overall, tenure reasonableness, and policy effectiveness overall.

The outstanding faculty, exceptional students, and dedicated staff in the College of Sciences and Mathematics have always played a prominent role in making Auburn University such an appealing choice for prospective college students.

Last fall, COSAM attracted 809 new freshmen, bringing its total enrollment to an all-time high of 2,866. Those freshmen came to Auburn with an average 3.75 grade-point average, the highest in the



university. And 46 percent of COSAM students graduating last May finished with honors.

The expertise of the college’s faculty members has been sought by National Geographic magazine, the National Geographic Channel, The New York Times, Science journal, and other distinctive national media.

I am pleased with the significant efforts coming from Dean Schneller and the College of Sciences and Mathematics that contribute to Auburn University’s image as a first-class academic and research institution.

War Eagle,

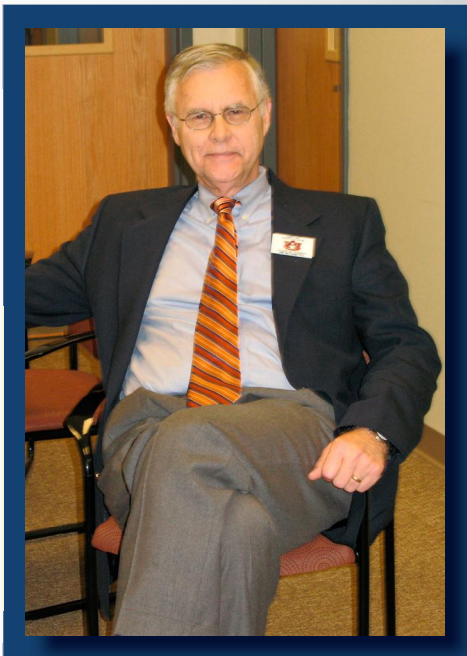
A handwritten signature in blue ink that reads "Jay Gogue". The signature is written in a cursive, flowing style.

Jay Gogue

MESSAGE

From the Associate Dean for Academic Affairs

Larry Wit



I think I could describe this year in three words: growth, groans and greatness.

Allow me to elaborate...

Growth: Auburn continues to grow in many ways. This past fall we registered another “bumper crop” of freshmen, and Auburn now has 20,762 undergraduate students, 2,866 of whom are enrolled in COSAM. Since 2000, Auburn University has witnessed a nine percent increase in the number of undergraduates. During the same period, COSAM has experienced a 68.4 percent increase! I am pleased to report a concurrent increase in graduate-student enrollment which is also experiencing a record-breaking (335) year.

Our new facilities continue to serve us well. Students enjoy the ambiance of modern lecture rooms and laboratories. Faculty, renewed by cutting-edge facilities and technology, are trying innovative ways to help students learn. One of the more popular is the adoption of “clicker technology” in a number of our classes and labs. Those of you who have watched the television show, “Who Wants to be a Millionaire?” may have seen such technology used when they polled the audience. The device allows the faculty to actually poll and display student responses during class and thereby engage each student as they learn. It allows each student to become actively engaged in the learning process rather than passively sitting in class.

There are several other new buildings being built on campus that should impact our students. The new student union, located where the eagle cage once stood, is nearing completion and should be fully operational during the summer. A new dorm complex, The Village, is being built on the west side of campus where parking lots once flourished. This much-needed facility will allow more students to live on campus and to integrate some of the academic functions into student housing.

Groans: Did you think it was hard to park on campus when you were a student? It is virtually impossible now. Both the new buildings and the “pedestrianization” of the campus have made it impossible for students, and nearly impossible for faculty and staff, to park on campus. However, Tiger Transit is a very efficient transportation service that shuttles students and staff to and from campus, and the changes have made the campus safer.

The advent of a new data-management system called Banner has caused more than a little groaning from all segments of the Auburn University. Transferring academic, personal and financial records to the new Banner system, and getting it to run properly, has been a huge undertaking. As of this past fall, all systems were up and running (well, at least crawling) and as of this writing, most everything is working. If you were having trouble getting an accurate transcript, I think those days are behind us.

Greatness: Yes, it is still great to be an Auburn Tiger! Although that phrase is mostly used in athletics, it also applies to academic successes. *I was so much better prepared than my classmates who went to another school*, is the testimony of so many of you who have gone on to professional/graduate school. COSAM freshmen still have the highest high-school grade-point average (3.75) and the second-highest ACT scores (25.5) of all freshmen at Auburn. Our students continue to be recognized and honored in many different ways. For example, Alex Tucker, a senior in microbiology, was named to the USA Today All-Academic Team.

I would love to hear from you. Take a minute to catch me up on what has been happening in your life. Just send me an e-mail at witlawr@auburn.edu. Of course, if you are ever in the area, please stop by the office. I would like to show you around.

MESSAGE

From the Associate Dean of Diversity

Velma B. Richardson



It has been a highly productive year for the COSAM Office of Diversity and Multicultural Affairs. African-American student enrollment surged to 13 percent of the College's total enrollment — a truly remarkable achievement considering the college's enrollment now exceeds the percentage for Auburn University as a whole! The attainment of this benchmark demonstrates COSAM's commitment to diversity and inclusiveness, and affirms the diligence of staff involved in the identification and recruitment of talented and highly motivated minority students.

The COSAM Summer Bridge program continues to be one of our most successful strategies for attracting and preparing minority undergraduates for careers in the sciences, mathematics and health-care professions. The success of this program has led to its adoption as the model for the newly instituted campus-wide Bridge program.

The 2007 Summer Bridge program was a great success! We recruited an outstanding group of 34 incoming freshmen and celebrated the accomplishments of Dr. Herman Turner, Jr., a 2000 Summer Bridge alumnus who received a doctor of physical therapy degree. Dr. Turner, a native of Selma, AL, delivered an inspirational address during the awards luncheon. We sincerely thank Dr. Turner for honoring us with his presence and congratulate him on receiving a doctor of physical therapy degree. He has accepted a position at the Cooper Green Care Facility in Birmingham, AL. The success enjoyed by Dr. Turner demonstrates that our earlier recruitment efforts and scholarship offers are producing the desired results as more outstanding minority students are enrolling in COSAM disciplines and gaining entry into

graduate and professional schools. Significantly, more than 50 percent (17/33) of the participants in the 2007 Summer Bridge program were male students, an outstanding achievement at a time when dramatic decreases are seen in the enrollment of African American males in higher education.

The COSAM Drop-In Center hosted the Annual Minority High School Visitation Day during the fall semester. More than 48 potential students, parents and counselors, representing four high schools in Alabama and Georgia, engaged in "one-on-one" discussions with representatives from the offices of admissions and financial aid, COSAM department heads/chairs, and student leaders. We are confident that these activities will bear significant fruit in the future.

Two major initiatives were implemented during this academic year: a reunion for the 2007 Summer Bridge class, and an open house for the Drop-In Center. The goal of the fall reunion was to strengthen the academic and social networks created by participants during the summer, while the goal of the open house was to highlight the many services and resources available in this facility.

Revitalization of our existing peer-mentoring program, Promoting Academic Student Success (PASS), is on schedule for late spring. Collectively, these initiatives are designed to decrease minority attrition rates by building community and providing opportunities for leadership-skill development. We are excited about these activities and look forward to conducting peer mentoring training sessions during the spring semester.

2007-2008

COSAM Leaders

The COSAM Leaders are an exemplary group of students who serve the college as its official ambassadors.



Back Row: Steve O'Neil, Scott Littlepage, Tyler Wahl, Davis Reed, Adam Jones, Rohan Kambeyanda, Stephen Tonks, Chris Fioritto

Front Row: Krystal Lockett, Meredith Gaston, Michelle Bushnell, Caylen Nevins, JaRyce Nabors, Joanna Lianos, Chaney Shafferman, Marjorie Hannon

2007 Dean's Medalists

The Dean's Medalists are outstanding graduating seniors in each department.



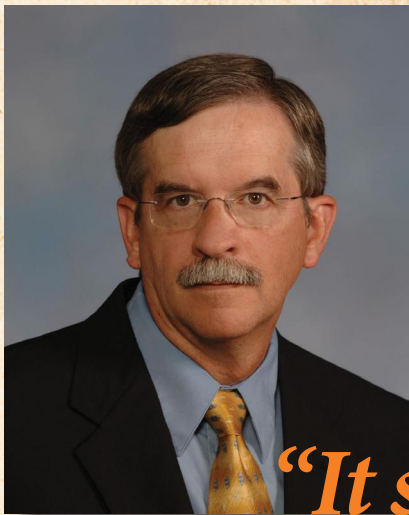
Top Row: Alex C. Tucker (microbiology, Webb, AL), Allan Seibert (chemistry & biochemistry, Mobile, AL), Andrew M. Land (microbiology, Hoover, AL), Ashley M. Neme (biomedical sciences, Huntsville, AL)

Bottom Row: Christopher S. Norton (mathematics & statistics, Florence, AL), Mac W. Martin, Jr. (geology & geography, Plantersville, AL), Emily B. Tapley (biomedical sciences, Montgomery, AL), Meghan E. Hayden (microbiology, Baton Rouge, LA), Michael E. Taylor (physics, Florence, AL)



COSAM FACULTY HONORED

at Auburn University Faculty Awards for Excellence in Instruction, Research and Outreach Ceremony

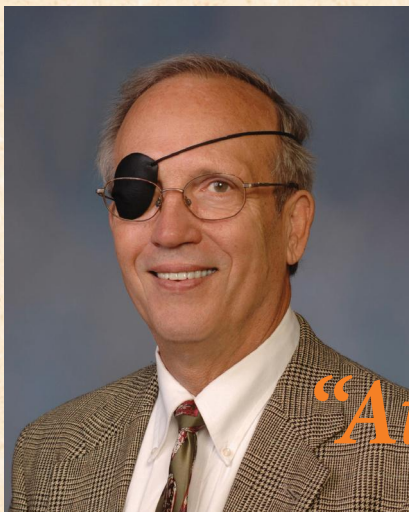


“It’s

Roland Dute, Ph.D., of the department of biological sciences received the Gerald and Emily Leischuck Endowed Presidential Award for Excellence in Teaching. An Auburn University faculty member for 25 years, Dute teaches freshmen biology courses for majors and non-majors as well as advanced undergraduate and graduate courses. He also advises undergraduates in the zoology and pre-veterinary medicine curriculum, mentors graduate students and has served on 38 graduate-student committees. Inspired by a former student, Dute is also involved in biology education for the visually impaired.

The award is a prestigious honor which recognizes those faculty members who have demonstrated effective and innovative teaching methods, and a continuing commitment to student success through advising and mentoring inside and outside the classroom. The award carries a \$10,000 stipend for each recipient. Emeritus senior administrators, Gerald and Emily Leischuck, established the endowment in 2005 to recognize the university’s teachers, and Auburn presented the first Leischuck Endowed Presidential Awards the same year.

always nice to be rewarded for doing something you love to do, and I love teaching.” -Roland Dute



“At

Phillip Zenor, Ph.D., of the department of mathematics and statistics received an Alumni Undergraduate Teaching Excellence Award. Zenor co-designed and taught a four-quarter course sequence that integrated calculus and physics. He also co-authored a calculus text that maintained the structure from the integrated class. With an NSF grant, he co-designed and conducted a two-year sequence of courses that integrated the topics in physics, mathematics and engineering. He is currently a co-principal investigator on a \$9 million NSF grant (TEAM Math) working with Tuskegee University and 15 school districts in the surrounding area to reform and improve mathematics instruction in public schools.

The Alumni Undergraduate Teaching Excellence Awards are presented on the basis of outstanding teaching of undergraduates from nominations made by department heads, deans, alumni, and students, and carry a \$1,000 honorarium. A committee of retired faculty selects the recipients.

this point in my career, of all the awards I might receive, recognition for teaching is the award that means the most to me.” -Phillip Zenor



“My

Jonathan Armbruster, Ph.D., associate professor and curator of fishes in the department of biological sciences, was named an Alumni Professor.

“It is an incredible honor that makes all the work I have done worthwhile,” Armbruster said about receiving the award. “At the same time, I think it is something that is great for my department. My department is filled with excellent researchers and teachers, and the alumni awards that we have won bring recognition to the department of all the hard work that we do.”

The five-year professorships are sponsored by the Auburn Alumni Association, and are presented on the basis of research, publishing and teaching.

“I have always tried to be at the forefront of using modern tools in teaching,” Armbruster said. “I have developed Web sites, allow students access to my notes, and give online help. At the same time, I try to make the classroom experience as interesting as possible with examples from my travels and experiences, stories in the news, and modern accomplishments.”

philosophy has always been to give the students as many resources as they need to succeed...”

-Jonathan Armbruster



ENERGY IN THE 21ST CENTURY: A PERFECT STORM?

by: Timothy Meeks

It could be a gallon of gas or a gallon of milk. It could even be a gallon of water — something that frequently appears in either too large or too small a quantity. Many of the “gallons” you buy today probably cost more than the last time you purchased them, even if you do so on a weekly basis. The likely culprit: the energy required to produce and deliver your gallon.

Geopolitical instability, exponential growth in energy demand, and increasing questions about the finite nature and environmental impact of fossil-fuel production dominate global headlines, but also hit very close to home. With a family of four, **John Trawick** (applied mathematics '90) is familiar with the portions of household budgets impacted by increasing energy costs. And yet, he remains an optimist. As Vice President of Strategy, Pricing and Contracts for the Tennessee Valley Authority (TVA), the nation's largest public power company, that's a very good thing.

Strategic Thinking

A strategic thinker at the crux of energy discovery and delivery would have ample reason to be pessimistic. The challenges seem to be increasing. The problems are far-reaching and complex.

“We are quite possibly facing a ‘perfect storm’ on the horizon,” Trawick said.

Citing high oil prices, increased costs for building production capacity, and expanding consumption, the entire global economy is impacted by emerging energy issues. Additionally, with retiring baby boomers and a high demand for skilled workers, labor issues also abound. Energy

production and delivery is a complicated endeavor. How does Trawick approach the complexities of strategic planning in this environment?

“You have to take a big-picture look at things and you decide at some level which things are inter-related and try to isolate those things as being a global macro factor,” Trawick said. “Then sit back and say, ‘*if that occurs what does it mean for the overall business?*’”

Trawick's Auburn experience connects him to fellow mathematics graduate, Don Logan, former CEO of Time Inc:

“I was back in Auburn for Don Logan's induction as COSAM's 2006 Outstanding Alumnus and his acceptance speech really resonated with me,” Trawick recalled. “Logan talked about how he approached business decisions during his career, and would put things up on his white board and evaluate them from a strategic standpoint; and he would utilize his math background to make decisions about possible outcomes, considering all the variables. I tend to do the same thing by trying to assess different quantitative avenues and seeing how they connect.”

The variables in Trawick's equations are wide ranging and diverse, but by their very diversity, they provide opportunities for innovation, flexibility and change. Encouraging energy conservation and efficiency (*see sidebar*) can have profound effects on many levels. Trawick also sees the TVA continuing to diversify its power system with a mix of fuel sources, including fossil, nuclear, hydro and renewable.

Energy production does not occur in a vacuum and



John Trawick on the Benefits of Automated Metering

I think that one of the things we're seeing more and more of coming into this business is automated metering. Currently, most people today, no matter when they use energy through their meter, get charged for the same price. There's no allowance for the difference between consuming energy at the hottest part of the day versus the overnight hours. Technology is now being implemented through local utilities to install new metering, with the idea that if we send the price signal that we will reward consumers for changing their usage, they will be able to impact their bill. If consumers shift doing laundry from the middle of the day, when summer temperatures and humidity are at their highest, there will be benefits for the consumer and the energy provider. This, and other new technology, can lead to improved efficiency on many levels.

the TVA has committed to environmental stewardship and economic development as crucial to their mission. Trawick cites the shared investment of the TVA and the communities it serves as an incentive for advancement. Through cooperation, he sees the opportunities for true progress. How does Trawick find optimism in the challenges facing the industry?

“At the end of the day, if one evaluates all the circumstances and you put the best plan you can into place that can be flexible enough to respond to a change, then that’s the best you can do,” Trawick said. “I have confidence that given solutions, people will respond.”

Conservation, Community and Service

Trawick and his family enjoy life in the Tennessee Valley. Weekends on the Cumberland Plateau give Trawick a sense of ownership, community and link to his past.












“My grandfather was a WPA (Works Progress Administration) worker in the Tennessee Valley, and when I come up here and see these roads and buildings, I think of him. It’s that work ethic that came from the New Deal, of serving the public good, which is so meaningful. I feel a responsibility for our generation to remember that commitment,” Trawick said.

The TVA is celebrating its 75th Anniversary in 2008. Trawick credits the original mission of the TVA for creating the culture of the organization today.

“It goes a lot deeper than energy. Managing and preserving resources, creating jobs and supporting communities go along with our customer focus,” Trawick said.

With his Auburn foundation in mathematics, and his roots and connection to the ideals of service and community, Trawick has all the tools to effectively plan for the future of the energy industry. He will face challenges, but this strategic planner for the nation’s largest public-power company has a sense of purpose, direction and optimism. Those ideals appear to be well suited for energy exploration and production in the 21st century.

Visitors to the Tennessee Valley Authority’s corporate headquarters in Knoxville, TN are greeted with posters and charts of the two-tower complex’s monthly energy efficiency ratings. Reduction targets for the headquarters are aggressive, and months where the goals were not met are highlighted in red. The TVA is modeling for consumers best practices for energy conservation. Some home tips for you:

-  Caulk and weather-strip around windows and doors to stop air leaks.
-  Replace incandescent bulbs with compact fluorescents — they use 75 percent less energy and last 10 times longer.
-  Fix any leaky faucets — one drop per second can add up to 165 gallons a month.
-  Look for the ENERGY STAR® label when replacing large or small appliances.
-  Use power strips for home electronics and turn off power strips when equipment is not in use.
-  Lower your water heater temperature to 120 degrees Fahrenheit.
-  During the day, in the winter, keep curtains open on the south side of the house and closed on the north side to help keep warm.
-  Air-dry dishes instead of using the dishwasher’s heat drying option.
-  Dry one load of clothes immediately after another to minimize heat loss.
-  Keep your freezer full. The fuller the freezer, the less cold air you lose when opening the door.
-  Hang on to appliance manuals so you can refer to them for care information and possible energy-saving tips.

For a complete list of energy saving tips:

<http://www.energyright.com/energytips.htm>

Geology & Geography

The Ingersoll Shale: A Feather in Our Cap

(top right) Rare deposits containing unusually well-preserved fossils, known as fossil-lagerstätten, provide particularly clear windows into the history of life. Recent graduate students, Sean Bingham (07) and Terry Knight (07), under the direction of NSF Co-principal investigators Drs. Chuck Savrda and Ron Lewis, completed master's thesis projects on one such deposit in the Cretaceous Eutaw Formation of eastern Alabama (1). This deposit, a thin (<1 m) clay lens dubbed the Ingersoll shale in deference to landowner Michael Ingersoll, who graciously provided access to the site, contains an unusually well-preserved assemblage of terrestrial fossils. The deposit has yielded a diverse flora, including articulated foliage, flowers, cones and seeds (2); amber with entombed fossils such as spiders and mites (3); and most notably, the largest collection of fossil feathers thus far recovered from the Upper Cretaceous of North America (4). This compact fossil bonanza accumulated rapidly in what was a narrow and shallow tidal channel in the upper reaches of an ancient estuary. Factors contributing to unusual fossil preservation include rapid burial, anoxic substrates, early pyrite growth, and, in the case of feathers, replacement by bacteria. The first of several papers describing this deposit and its fossil biota is featured as the cover article in the May-June 2008 issue of the journal *Palaios*.



AU GEOGRAPHERS AND GEOLOGISTS: EXPLORING ABOVE AND BELOW THE SURFACE



Chuck Savrda
Department Chairman

Dr. Tom Martinson and Dr. Bob Cook were awarded Emeritus Professor status upon retirement in the summer of 2007. Dr. Martinson's position was filled by Dr. Joshua Inwood, a new assistant professor whose research focuses on urban geography with an emphasis on racialized identities and

places. The department will fill Dr. Cook's position with an igneous petrologist/economic geologist in August 2008.

The department recently played host for two visiting scientists. Scott Harris, who is completing his doctorate at Brown University, has been working with Dr. David King and his students on various projects involving impact craters and their ejecta. Dr. Mark Anderson, professor and chair at the University of Plymouth, visited with Drs. Mark Steltenpohl and Bill Hames to develop collaborative projects on the tectonic evolution of the Scandinavian caledonides.

With support from the United States Geological Survey, Bill Hames, Dr. Jim Saunders and collaborators at the University of Florida have employed innovative Pb-isotopic techniques and Ar-Ar geochronology to better understand the influence of the Yellowstone hotspot on mineralization. Results are providing compelling evidence that the magmatic processes responsible for the geology of Yellowstone National Park also may have caused the formation of hydrothermal gold deposits in Nevada and Idaho about 15- to 16-million years ago.

Dr. Luke Marzen, leveraging continued support from the AmericaView Program, has received new funding from the Mississippi-Alabama Sea Grant Consortium (MASGC) and the Alabama Water Resources Research Institute (AWRRI). Studies funded by MASGC focus on the impact of tourism on the working waterfront in Mobile County, AL. AWRRI funds are being used to explore the use of

thermal infrared imagery to monitor and assess the impacts of drought.

Dr. Lorraine Wolf and Dr. Ming-Kuo Lee recently employed a grant from Auburn's Office of Outreach to initiate a program called Water Education for Alabama. In collaboration with Auburn University's Environmental Institute, they are establishing a permanent field station at Auburn University's E. V. Smith Center for conducting groundwater activities for middle-school children and teachers. Current outreach efforts are directed at students and teachers from Alabama's Black Belt region.

Faculty and students were recognized for their research and teaching efforts. Dr. Chuck Savrda was named Schamagel Professor of Physical Sciences, while Steltenpohl received the 2007 COSAM Outstanding Teacher Award. Germari de Villiers earned the COSAM Outstanding Masters Research Award for her studies of potential marine-impact craters on Mars, a research project that was supervised by Drs. King and Marzen. Amanda Savrda received the COSAM Outstanding Undergraduate Research Award for her laboratory bioremediation studies of acid-mine drainage. Amanda Savrda's research was supervised by Drs. Wolf and Lee. Mohammad Shamsudduha (a.k.a. "Shams") received the 2007 Sigma Xi Outstanding AU Masters Thesis Award for his studies of groundwater arsenic in Bangladesh, completed under the supervision of Dr. Ashraf Uddin.

Four students held AU or COSAM Undergraduate Research Fellowships during 2007. Thomas Key, also the first Hargett-Dunston undergraduate field research grant recipient, used his fellowship to support his mapping in the Norwegian Caledonides under the direction of Dr. Steltenpohl. Jessica Morgan is working with Dr. Ron Lewis on benthic forams from San Salvador, Bahamas, while Chris Ploetz is working with Dr. Phil Chaney on the impacts of hurricanes Ivan and Katrina on Dauphin Island, AL. Under the direction of Drs. Steltenpohl and Wolf, Amanda Savrda is completing petrographic and geophysical studies of basement rocks beneath the coastal plain.

MAKING THE WORLD BETTER



Joe Perez

Department Head

Learning: The department of physics has been selected by the National Center for Academic Transformation as a site for course redesign. The course selected is the introductory calculus-based engineering-physics sequence, but we anticipate extending the effort to include the algebra-based sequence.

The redesign is driven by the desire to implement

the findings of more than 20 years of physics-education research in a manner never before accomplished: it creates an environment in which all of our faculty can work interactively with our students, providing the best possible teaching and learning environment. Among other things, we will use technology to enhance the process of teaching and learning and to extend access to non-traditional students, we extend the student-learning support system, we will provide students with options for completing the course requirements, and students will be made aware of their learning style and be able to select options that suit them.

The redesign team is led by **Allen Landers** and **Marlin Simon** of the physics department. Other team members include **Daniel McDougal**, head of the COSAM IT staff, and **James Groccia**, director of the Auburn Biggio Center for Teaching Effectiveness. **Joe Perez**, head of physics, is an ex-officio member of the team and will provide oversight and guidance.

This spring the team will interact with redesign scholars at a meeting in New Orleans, LA, and then present their model for approval. The first offering of the redesigned course will be in the fall of 2008.

Energy for the Future: Faculty and students in the department are contributing to the world-wide effort to produce energy from the process of nuclear fusion. At the multi-million degree temperatures required for fusion, matter is in the plasma state, or completely ionized. In the Auburn Fusion Laboratory, Professor **Stephen Knowlton** leads an experimental research team on the Compact Toroidal Hybrid device to identify robustly stable methods of confining high temperature plasmas for fusion research. Auburn physics professors **Robert Boivin**, **James Hanson** and **Edward Thomas** are the other faculty members of the team.

Thomas also heads the Plasma Sciences Laboratory in which he directs studies of dusty plasmas and driven rotation in plasmas, both with relevance to fusion. The behavior of dust grains in real-world plasmas is of great importance not only to fusion researchers, but to integrated

circuit manufacturers and planetary scientists as well. In addition to pursuing their on-campus research, Knowlton and Thomas are active leaders of the U.S. fusion research and educational community. Knowlton presently serves as president of the University Fusion Association, a non-profit consortium of university-based researchers, faculty and students involved in fusion energy research. In

this position, he regularly represents university interests in fusion before government and congressional agencies.

Thomas will soon complete four years of service on the National Research Council's Plasma Science Committee, and is a member of the Department of Energy's (DOE) Fusion Energy Sciences Advisory Committee, charged with providing scientific advice to DOE on multi-faceted aspects of the nation's fusion program.

New faculty member **Stuart Loch**, along with collaborators from Europe and the Oak Ridge National Laboratory have designed experiments that will be performed on European tokamaks, JET in the United Kingdom and ASDEX in Germany, as part of the international fusion effort. The experiments will help scientists understand the effects of impurity contamination from the walls of a future fusion reactor. Loch holds a joint faculty appointment at Auburn and the Oak Ridge National Laboratory.

Energy Efficiency Now: The focus of Auburn University Physics wide and gap (wbg) semiconductor materials program is technology development for advanced, energy-efficient systems for electric power management and distribution (PMAD). We develop process technology (e.g., dielectric layer growth and metal contact formation) for electronic devices based on the wbg semiconductor materials silicon carbide (SiC) and gallium nitride (GaN). Wide band gap devices are being developed to replace the silicon-based devices that are currently used for most electronic power applications — including subsystems that are part of the national electric power grid, hybrid electric vehicles, and control systems for industrial motors. We transfer process technology developed in our program to companies that fabricate devices (e.g., diodes and transistors) and develop advanced systems for PMAD applications. The picture (*below right*) shows one of the wbg semiconductor materials program facilities. It is used for ion implantation and thin film analysis. We have strong collaborations with a number of companies that produce wbg materials and devices (Cree, Inc., Kyma Technologies, SemiSouth Laboratories and Dow Corning), and we have recently joined the Auburn University Natural Resources Management and Development Institute. The institute seeks to develop alternative clean-energy sources in order to reduce our dependence on imported fossil fuel products, protect our environment, and move us toward stability in an increasingly volatile energy market. Our wbg-materials program naturally complements the alternative fuel programs in the institute. Regardless of the energy source, energy consumption with maximum efficiency will produce many long-term benefits, including lower cost, slower depletion of energy reserves, less pollution (CO₂, SO₂, Hg, nitrogen oxides and particulates), and perhaps greater security for our nation.

We have recently received a patent (U.S. Patent No. 6,939,756 B1), for inclusion of Nitrogen at the Silicon Dioxide – Silicon Carbide Interface for the Passivation of Interface Defects. We have a joint Auburn-Vanderbilt patent licensed to Cree, Inc for SiC MOSFET (metal oxide semiconductor field effect transistor) fabrication. We also have another patent pending, (U.S. Patent Pending, Application No. 11/455,351), for Ultrafast Gallium Nitride Schottky Rectifiers and Photodetectors, which is a joint Auburn-Kyma Technologies, Inc. application. It is to be noted that the faculty inventors have received their first royalty check of \$177.08. Untold riches are sure to follow.

Maybe Not: The recent loss of Professor **Eugene Clothiaux** and the retirements of faculty members **An-Ban Chen**, **Albert Fromhold**, **Junichiro Fukai** and **D. Gary Swanson** have deprived the department of more than a century of combined experience. One of these positions has already been filled, two searches are underway, and two more will commence next fall. Nevertheless, we face an enormous challenge in replacing these Auburn men.

Physics

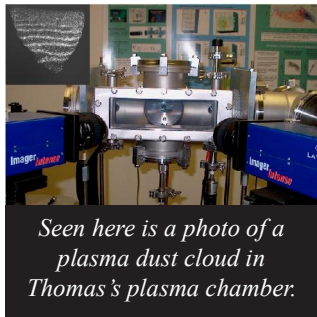
SELAC: Annual Workshop at AU

For the first time, on February 25 and 26, 2008, the Southeast Laboratory Astrophysics Community (SELAC) held their annual workshop at Auburn University. SELAC is a community of researchers that come together to promote astronomy, astrophysics, and laboratory astrophysics in the Southeastern United States and nationally. The goal of the organization is to facilitate research that 1) addresses the laboratory needs of NASA space missions 2) highlights ground-based observations and 3) promotes modeling and simulation efforts. By advocating work performed in these areas, SELAC hopes to advance knowledge of astronomy and astrophysics as well as raise awareness and recognition of laboratory astrophysics. The AU physics department hosted the 2008 workshop on *Atomic Ion Stage Abundance in Astrophysical Plasma*. From all over the Southeast, 45 participants contributed to the workshop, many of which are Auburn University affiliated professionals, including former Auburn post-doctoral students **Nigel Badnell**, **James Colgan**, **Julian Berengut**, **Connor Balance** and **Dario Mitnik**; current Auburn graduate student **Jorge Munoz**; former Auburn doctoral student **Michael Witthoef**; Auburn professors **Allen Landers**, **Stuart Loch**, **Francis Robicheaux** and **Mitch Pindzola**. Topics covered include trying to resolve current astrophysics mysteries, such as the nature of the galactic bubble, and interpreting new X-ray observations of astrophysical objects.

For more information on SELAC, visit the Web site at www.orau.org/selac.



One of the facilities that is part of the wbg semiconductor materials program.



Seen here is a photo of a plasma dust cloud in Thomas's plasma chamber.

Biological Sciences

FOOD-BORNE ILLNESS, E. COLI, ALTERNATIVE FUELS

James Barbaree, president of the Southeastern Branch (SEB) of the American Society for Microbiologists (ASM) and professor and chair of the department of biological sciences at Auburn University, hosted the 2007 SEB-ASM annual meeting (*center photo*). In accordance with the ASM mission to “advance microbiological sciences through the pursuit of scientific knowledge and dissemination of the results of fundamental and applied research, the program featured workshops, keynote speakers, symposia, and undergraduate and graduate-student oral presentations and poster exhibits. Notably, keynote speakers discussed topics that are highly relevant to today’s ever-changing world. **Robert Tauxe**, with the Centers for Disease Control and Prevention in Atlanta, GA, elaborated on food-borne illness outbreaks. **Terry Hazen**, with the Lawrence Berkeley National Lab, gave a speech on “Bioremediation: the Hope and the Hype for Environmental Cleanup.” The meeting also featured keynote speaker **John “Skip” Foster**, who is an associate professor at the University of South Alabama Medical School in Mobile, AL. Foster, who has worked extensively with Auburn University, discussed his research on E. coli O157:H7. For the first time, the meeting had a ground-breaking symposium on microbes and alternative fuels. Other symposium topics included pathogenesis and veterinary and clinical biology, environmental microbiology, eukaryotic microbiology, biosensors for pathogens, and symbiosis. Additionally, attendees had the opportunity to participate in workshops, including a clinical microbiology workshop where MRSA was a featured topic.



James Barbaree
Department Chairman

BIOLOGICAL SCIENCES REPRESENTS AU INTERNATIONALLY

Dr. Aaron Rashotte, a developmental geneticist, joined the department as a tenure-track assistant professor. He studies plant developmental genetics with a focus on the development of leaf structure.

Dr. Wendy Hood, who is a physiological ecologist, came to the department as a research assistant professor. In her area of research, she focuses on how nutritional constraints influence the reproductive performance, ecology, and evolution of the life histories of vertebrates.

As the current president of the Southeastern Branch of the American Society for Microbiology, Department Chairman **Dr. James Barbaree** hosted the annual meeting of the branch at Auburn University. It was one of the biggest meetings in the history of the organization. Over 100 posters and oral presentations were made by the students, and three keynote speakers addressed the attendees.

Jim Bradley, of the department of biological sciences along with collaborators in the departments of history, English, philosophy, chemical engineering and biology at Auburn University, Auburn University at Montgomery, and Tuskegee University, have developed and taught an interdisciplinary course in Concepts of Nanoscience for freshmen non-science majors at these three universities. The

course was taught twice in 2007, and the project is funded by a National Science Foundation grant in Undergraduate Education, “Ethics of the Nanoscale.”

Dr. Bob Loey was elected as Auburn University Senate Chair-Elect. In March, 2008 he assumes the duties of the chair of the senate.

Through the efforts of **Dr. Craig Guyer** and

his students, the Auburn University Herpetology collection was added to HerpNet, an international museum data base. Also, they have embarked on a new project to repatriate the Eastern Indigo snakes into the Gulf Coastal Plains longleaf pine forests.

Dr. Bob Boyd gave an invited presentation at the 9th International Conference on the Biology of Trace Elements, held in Beijing China in July, 2007. His presentation was on how hyperaccumulated nickel in plant tissues can affect ecosystem functions such as decomposition rates.

Heather Trevino received the Auburn University graduate school Top Ph.D. Student award.

Jeremy White received the Outstanding GTA award in COSAM.

Jessica Hagins was awarded first place in the Auburn University GSC Research Forum.

Adele Balmer was elected as president of the Auburn University Graduate School Council.



The American Society for Microbiologists held the 2007 annual meeting at Auburn University.

COMPOUNDING SUCCESS



Vincent Ortiz
Department Chairman

Kathryn Milly West (1), who has a master of science in physiology and is a medical technologist certified by the American Society for Clinical Pathology, received the 2008 Southeast Regional Member Award of the American Society for Clinical Pathology at a ceremony in San Francisco, CA on February 28, 2008. The award recognizes exceptional ASCP members who have promoted and enhanced the field of laboratory medicine and who have rendered distinguished service in the Southeast. West is the department's principal instructor and advisor in its laboratory technology and medical technology baccalaureate programs, and also the department's outreach coordinator.

Assistant Professor **Orlando Acevedo (2)** won one of four 2008 Hewlett-Packard Outstanding Junior Faculty Awards. Winners are selected by the American Chemical Society's (ACS) Computational Division. Acevedo will receive his award at ACS's national meeting in New Orleans, LA in April, 2008.

Household and medical applications of Professor **Dave Worley's (3)** research in antimicrobial polymers are featured in the September 10, 2007 issue of Chemistry and Industry magazine.

Assistant Professor **Anne Gorden's (4)** recent article "Uranyl Stabilized Schiff Base Complex" in Chemical Communications magazine has been highlighted on the Web site of Chemical Science, the Royal Society of Chemistry's news magazine.

Professor Emeritus **Thomas Webb (5)** was honored for 32 years of service to Auburn University at a ceremony at the Alumni Center on September 12, 2007.

Graduate student **Travis Bray (6)** has been awarded a Harry Merrivether Fellowship for 2007. Only four such awards are made to Auburn graduate students per annum.

Assistant Professor **Christian Goldsmith (7)**, a former postdoctoral fellow at the Massachusetts Institute of Technology, joined the faculty in August, 2007. His interests include organometallic and bio-inorganic chemistry. Goldsmith obtained his doctorate at Stanford University and his bachelor's degree at Harvard University.

Two new instructors, **Dr. John Gorden (8)** and **Dr. Joshua Ring (9)**, will contribute to the department's first-year chemistry courses.

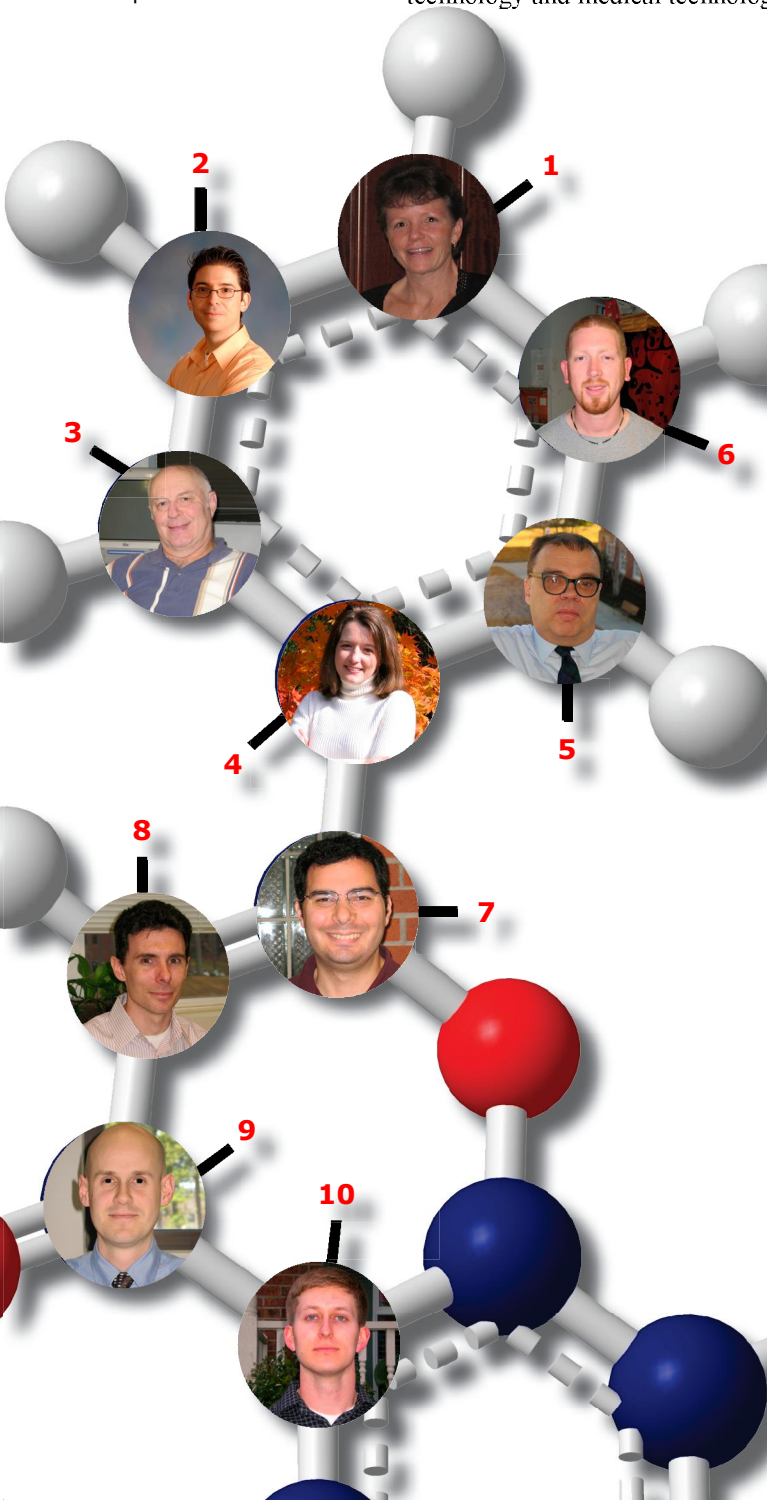
Chemistry & Biochemistry

New Faculty, Instruments & Activities

Dr. Christopher Easley (10), a postdoctoral fellow at Vanderbilt University, will join the faculty as assistant professor in August, 2008. His interests in analytical chemistry include microfluidics, fluorescence microscopy, electrophoresis and the application of these techniques to the molecular biology of intercellular communication.

Several new instruments will significantly enhance the research and teaching programs of the department, and expand Auburn's collaborative capabilities in biological and materials sciences. Experiments in mass spectrometry, structural characterization of powders with X-ray diffraction, measurements of electromagnetic and thermodynamic properties, and characterization of materials with confocal Raman microscopy will be conducted with state-of-the-art equipment.

Revitalized student organizations, more faculty advisors, and increased outreach activities and social events for faculty, staff, students and their families have elevated the profile of chemistry and biochemistry on campus and off. The department invites alumni to learn more about its programs and to maintain contact with its faculty by visiting the Web site at www.auburn.edu/COSAM/.

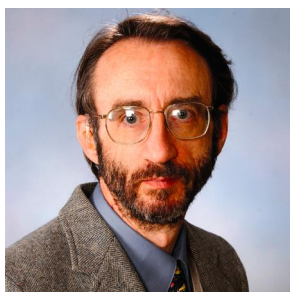


Mathematics and Statistics

Kuperberg Awarded Sierpinski Medal

Krystyna Kuperberg, Ph.D., (below right), was honored with the Sierpinski Medal from the Polish Academy of Sciences. This is a very prestigious honor presented to outstanding international mathematicians. She delivered a lecture on her research at the medal presentation ceremony in the spring of 2007 at the Polish Academy of Sciences. She was also invited by the organizing committee for the Women and Mathematics program at the Institute for Advanced Study in Princeton, NJ to give a presentation in May of 2008.

MATHEMATICIANS GO GLOBAL



Michel Smith
Department Chairman

Drs. Jo Heath, George Kozlowski, and Jack Rogers retired and were all granted emeritus status. Heath also served briefly as interim associate dean of the graduate school; Kozlowski was a former head of the department of mathematics; Rogers was director of the

Honors College at the time of his retirement. Two new assistant professors were hired: **Drs. Maggie Han and Dmitry Glotov**. Both will be contributing to the undergraduate actuarial program. **Dr. Overtoun Jenda** accepted the position of associate provost for diversity and multicultural affairs. He continues his mathematical interactions with the department.

Dr. George Hetzer was invited as a special session speaker at the Eco Summit in Beijing, China in May of 2007, and an invited speaker at The Second International Conference on Recent Advances in Applied Dynamical Systems in Jinhua, Zhejiang Province, China, in June of 2007.

Dr. Curt Lindner will be honored with a special conference in honor of his 70th birthday this summer in Istanbul, Turkey. It is being organized by at least two of his distinguished former students, and partially funded by the Turkish government. Lindner was also invited to give a series of talks for several weeks at the University of Queensland in Australia on his research.

Dr. Pete Johnson received the COSAM Faculty Research Award for 2006-07. The award was bestowed in March of 2007. Johnson was also the principal speaker at the 21st annual symposium in Mathematical, Statistical and Computer Sciences at Eastern Kentucky University. The symposium is a forum primarily

for undergraduate and graduate-student research, with some faculty research included. Additionally, at the recent Joint Meeting in San Diego, CA, Johnson was an invited speaker and panel member in the Project NExT program on "Developing and Maintaining a Successful Undergraduate Research Program."

Both Jenda and Johnson continued their successful summer NSF-funded Research Experience for undergraduates in algebra and discrete mathematics at Auburn, a program for which they will receive funding for the summer of 2008.

Drs. Michel Smith and Ed Slaminka led a successful effort in course redesign that will be supported by the National Center for Academic Transformation (NCAT). The focal point will be to design an online version of the pre-calculus core course. They will be accompanied by Associate Provost **Linda Glaze** and **Dr. Nick Backsheider** to a redesign workshop to be held in New Orleans, LA in April, 2008 with support from NCAT.

Dr. Geraldo De Souza was one of the organizers of a special session on PDE, Harmonic Analysis, and related areas in the meeting at Rio de Janeiro, Brazil from June 4 to 7, 2007. The meeting was organized by the American Mathematical Society and Brazilian Mathematical Society. He gave a series of talks in Europe in the fall of 2008 at locations such as the International Centre for Theoretical Physics in Trieste, Italy; Universidade de Coimbra in Coimbra, Portugal; Universidad de Granada in Spain; Universidad de La Laguna on the Spanish island Tenerife; and Universidad de Jaén in Spain. Drs. Geraldo De Souza and Yongsheng Han renewed the NSF grant supporting the Harmonic Analysis Conference. By the end of this three-year renewal period, the department will have had NSF support for the project for 26 consecutive years. His former Co-PI was **Dr. Jack Brown**.

Fulbright Scholar **Dr. Cristina Fernandez** will be visiting the department to work with **Dr. Kevin Phelps**. Fernandez received her doctorate from Universitat Autònoma de Barcelona in Spain.

The department continues its outreach efforts in Kindergarten through 12th-grade mathematics education with the NSF-funded TEAM-Math summer workshops. The department held its first math contest for high-school students in collaboration with the COSAM outreach office directed by **Mary Lou Ewald**.



COSAM OUTREACH IS GETTING UNDER THE SURFACE



Have you ever wondered why leaves change color? Do you know what is in your blood? Do you know how to use a lemon to power a clock?

The answers to these and many more questions can be discovered at COSAM's newest outreach program, GUTS (Getting Under The Surface). GUTS is a bimonthly evening program aimed at first- through eighth-grade students and their parent or grandparent. The evening includes dinner, followed by a one-and-a-half-hour science activity where students get to take something apart in order to learn how it works. Each activity features a theme that focuses on common objects (such as radios and roller coasters) and techniques (such as DNA fingerprinting).

"I learn stuff I never would have learned at school," said sixth grader Justin Smith. "Like, last time I learned about different germs that are found in milk and cheese."

Topics appeal to all audiences, making GUTS an event that is not only educational, but fun for the entire family. By making science fun, GUTS seeks to enhance science literacy within the community.

Director of Outreach for COSAM, Mary Lou Ewald, said that "by offering education to both the parent and child, we hope parents will begin and continue to encourage their child along the path of science education."

GUTS activities are led by knowledgeable instructors, such as certified teachers, COSAM undergraduates, graduates, professors, and anyone in the community interested in a scientific subject, with the hope that both the student participants and the parents gain insight into the world of science.

"I want her to know that science is an option for girls," said Sarah Stanwick on why she brings her daughter Olivia to GUTS. "Plus, this is something we can do together and both of us learn something new."

For more information on GUTS, visit the Web site at www.auburn.edu/cosam/outreach.

-Candis Hacker

SIMULATED MILITARY OPERATIONS

Do You Want to Play?

“**W**ar is part of the military element of national power and that’s why we’re here,” said **Davis Cooper** (laboratory technology, '77), senior military analyst at the Air Force Wargaming Institute (AFWI) at Maxwell Air Force Base in Montgomery, AL.

Since 1986, the AFWI has been in operation. The institute’s mission is to “provide wargames...focused on joint warfare, and air and space power...to educate and train warfighters.”

Using state-of-the-art computing and communications systems, the 56,000-square-foot wargame facility is equipped to train today’s Air Force to learn important procedures, tasks and skills necessary for war. By taking part in the wargames, students at the institute are able to better understand the concepts, questions and decisions they will be faced with should they ever engage in war.

Cooper, who is a retired career United States Air Force Lieutenant Colonel, held the position of Director of Wargaming Operations until he retired and became a contracted employee with a military defense contractor. Currently, as the project manager for a major wargame and the system manager for the primary wargaming computer

model used for the adjudication, Cooper works as a wargaming specialist for two types of wargames: software/computer-based and manual/seminar-based.

“The students are presented with a story line and they are responsible for coming up with solutions and courses of action,” Cooper explained. “They then give their solutions to a control team who plays out the scenario and comes up with a situation brief that provides students with the outcome of their course of action.”

The wargame story lines are not limited to real-world places and situations. In fact, one of the wargames takes place in a land called “Pegasus” where countries are named for planets such as “Neptune” and “Pluto.”

“The ideals we teach and the principals the students learn are universal, so they should be applicable to any situation,” Cooper said of the fictitious-world wargames. “A lot of our games even take place out into the future five or 10 years so we can use new technology.”

By projecting the games into the future, students are able to explore concepts and issues that might affect future war strategy. For example, according to Cooper, one of the biggest limitations to today’s military technology is “getting people

WARGAME: A SIMULATION, BY WHAT
INVOLVING TWO OR MORE OPPOSING
PROCEDURES DESIGNED TO DEPICT AN ACTION

“Wargaming itself is a tool for gaining insights into the dynamics of warfare, revolving around the interplay of human decisions and game events. This provides us an opportunity for a strategic look at how an organization works and performs.”

-Davis Cooper



needed goods across the world quickly. Right now, we can only airlift one tank at a time, so if we are trying to move an entire brigade (about 120 tanks) it's a problem. One of the new pieces of technology we are using in the wargames is a new airlifter with enhanced capabilities. The students going through now are going to be fighting future wars, so we try to build our scenarios in a plausible way where students can absorb themselves in the game.”

In the past 10 years, he has helped facilitate operations in support of all wargaming and course events for AFWI, which translates into more than five major annual wargames with over 6,500 students.

“We encourage them to think outside the box,” Cooper said of the students. “There is no pre-conceived outcome. Our wargaming is not meant to be predictive or validate this is the way things should be done in real life, although we do have the ability to deal with sensitive issues in a classified environment if required. Wargaming itself is a tool for gaining insights into the dynamics of warfare, revolving around the interplay of human decisions and game events. This provides us an opportunity for a strategic look at how an organization works and performs.”

As a contractor, Cooper is ideal for his role at the AFWI because of his military training and experience. He was an aviator and instructor weapons-system officer in the F111 fighter-bomber, a position that had him living overseas for many years.

“I was in the service for 21-and-a-half years and made nine moves in that time,” Cooper said.

Despite the constant change of scenery, Cooper said he has no regrets about pursuing a career in the military rather than his initial plan to work as a laboratory technician.

“We (he and his family) had a chance to go places we never would have gone otherwise. We traveled all over Western Europe, Berlin — we went to East Berlin when it was still communist — we went to Russia (Moscow and Leningrad) all during the Cold War,” Cooper said. “But, my degree from Auburn gave me a lot of the background and basis for much of what I do today. Everything I did in school provided me the opportunity to be constantly questioning and to be exact. This job in particular, from a scientific point of view, requires me to get it RIGHT. I don't just want to be CLOSE. My degree at Auburn prepared me to be accurate.”

-Candis Hacker

A SPIRIT OF ADVENTURE

"Flying has taught me to always expect the unexpected. When you are flying, anything can go wrong at any minute. You always have to be ready and thinking ahead."

-Lauren Germany



STUDENT HIGHLIGHT:

At age 16, an age when most teenagers are concerned with getting their driver's license, **Lauren Germany** (biomedical sciences) was completing the steps necessary to get her pilot's license. A native of Atlanta, GA, Germany has since put her pilot's license to use as a student at Auburn.

"I share a plane with my two older brothers. We took money from all of our savings and bought the airplane. Mostly I go from (Auburn) to Atlanta when I need to go home for the weekend," Germany said. "But my brother and I actually flew to Montana this past summer, and my other brother and I flew to the Arkansas (football) game — that definitely beat driving."

For most college-age students, flying airplanes would be an unconventional hobby, but for Germany, out-of-the-ordinary is the norm.

"My dad always pushes me out of my comfort zone. He makes me do things that I might not normally do," Germany said of her father's influence. "Looking back, I really appreciate the things he has gotten me involved in."

Besides encouraging Germany to get her pilot's license, her father, who is a real-estate developer, views his work with an eye toward opportunities for his children to learn.

"I've done some dump-truck driving and I have been a skid-loader operator," Germany said of her experience working on her father's construction sites. "It's kind of cool to drive by a construction site and think, 'Oh, I know how to drive that machine — no big deal.' And over the Christmas break, he had my sister and me paint every shingle on the house by hand."

Besides piloting airplanes, completing home-improvement projects, and working at construction sites, Germany is the treasurer of her sorority, Kappa Delta, a COSAM Peer Instructor, a member of several honor societies, and she is an avid fan of intramural sports.

"Volleyball is my favorite sport to play, but I have pretty much participated in every other intramural sport there is — football, soccer, badminton, swimming, racket ball, track and field. The only one I don't play is basketball," Germany said.

Despite her numerous activities and interests, Germany has maintained one of the highest grade-point averages in COSAM.

The secret to her success?

"I don't turn on the television, and I stay organized with my planner. I guess what people say is true: 'When you have more to do, you are more productive.'"

Germany hopes to remain productive following graduation in May by attending medical school.

"I either want to be a primary care physician or a gastroenterologist," Germany said. "I'm not certain where I want to practice medicine, but flying might help me to get from town to town. That way, I could see more patients."

Whether she is flying from town to town visiting patients, or trying something completely "out of her comfort zone," no doubt Germany will continue to live life with a spirit of adventure.

-Candis Hacker

COLLEGE FACTS:

Undergraduate Enrollment

2,866

Faculty

157

Graduate Enrollment

333

Staff

115

Departments

5

Undergraduate Fields of Study

22

STUDENT HIGHLIGHT:

Although he grew up in Huntsville, AL, Auburn University senior **Rohan Kambeyanda** (biomedical sciences) regularly traveled to India to visit extended family during his childhood.

“It sets the stage for an appreciation of how privileged we are,” Kambeyanda said of his early travels. “The last time I went, I realized that life is really flexible and sometimes we get caught up in the mindset that what’s right in front of you is really important. Traveling makes you realize that there are other things that are important besides what’s right in front of you.”

Fueled by the unique perspective he gained in India, Kambeyanda decided to use travel as a means of discovering what path his college career would take.

“My freshman year I didn’t know what direction I wanted to go, but I knew I wanted to study abroad,” said Kambeyanda. “I also wanted to go somewhere that was different from Western culture.”

Kambeyanda set his sights toward the East, and he studied for one year in Japan.

“I was living in this incredible metropolitan city and I was having a bike ride down by the river and I looked around and saw all these big names like Sony and thought, ‘*Man, you are in the middle of all this global commerce.*’ I turned around and underneath this bridge where the subway ran, there were all these homeless people living in tents,” Kambeyanda recalled. “I realized that no matter how advanced we are, there are still people who need help, who are pushed aside. That was a big impetus for me.”

It was in that moment that Kambeyanda fully understood the importance of the volunteer work he had been doing in Japan.

“I realized that volunteering is something that really works for me, gives me a sense of purpose. So, when I came back (to Auburn) I wanted to do something that would be hard work and worthwhile,” Kambeyanda said of his moment of personal discovery.

Upon returning to the United States, Kambeyanda became a volunteer firefighter.

“I give a lot of time to it, and it’s a really vivid experience. I feel the more you have those types of experiences, the more you stand to learn,” Kambeyanda said.

In addition to living and working at the fire station, Kambeyanda is an Auburn Plainsman, a COSAM Leader, and a DJ for Auburn’s college radio station, WEGL. Additionally, Kambeyanda runs four or five miles each morning, maintains an active social life, and has spent time volunteering to help international students develop their conversational English skills. He also performs well in the classroom with close to a perfect 4.0 grade-point average. Because of his numerous activities and passion for learning, he’s often referred to as a “renaissance man.”

“It’s those activities outside the classroom that shape what your college experience will be like,” Kambeyanda said. “On top of that, getting involved with something you care about is really important because then you can dedicate your time to it and really enjoy it.”

Following graduation in December, Kambeyanda plans to dedicate his time to medical school, but said he also plans to “keep enjoying what I’m doing in the moment. I will continue to live fully and enjoy and appreciate life.”

-Candis Hacker

A TRUE RENAISSANCE MAN



While in Japan, Kambeyanda participated in a Shinto-religion shrine-carrying ceremony. In this photo, he is dressed for the religious event.

EXCELLENCE:

Fall 2007 brought another large freshmen class to COSAM, leading to a 68-percent increase in student enrollment since 2000.

Incoming COSAM freshmen came to Auburn with a 3.75 grade-point average, the highest in the university.

In May of 2007, 47 percent of COSAM s graduates finished with honors.

ALUMNI

Updates



Kacie Jackson (biological sciences, '07), was recognized for her undergraduate scholarly achievement in women's studies at an awards luncheon on January 14, 2008. Since its inception in 1984, the central role of the Women's Studies program, has been the teaching and promotion of research and scholarship about women and gender across the disciplines. Jackson is planning an upcoming mission trip and Inca-trail hike in Peru, and will attend medical school next fall.



Dr. Nicole Mashburn (microbiology, '90), was recently named the education coordinator for the Morgan County Soil and Water Conservation District. She will be a presenter at the April 19, D.A.M.E.S. (Daughters and Mothers Exploring Science) program sponsored by COSAM's Society of Women in Sciences and Mathematics. Pictured above are Nicole and her husband Eric (animal and dairy science, '90), who is a family medicine physician in Hartselle, AL, enjoying the Auburn vs. Vanderbilt football game with future Auburn Tiger, daughter Jesse.



Nancy Morris, who received a master's degree in chemistry from Auburn in 1964 and is an active supporter of COSAM, was recently honored by her undergraduate institution, LaGrange College. Morris received the Walter Malcolm Shackelford Distinguished Alumnus Award, given annually to former LaGrange students who have been noted for their social, civic, professional or business careers.

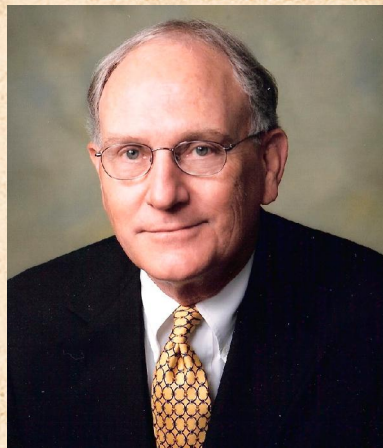
“Without the strong foundation that I obtained at AU this could never have happened.”

-Paul Lioy

Paul Lioy, who received a master's degree in physics and applied mathematics from Auburn in 1971, and his Ph.D. from Rutgers University, was named Rutgers University distinguished alumnus at a March 7, 2008 event in New Brunswick, NJ. Lioy is a professor of environmental and community medicine at UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ. He is associate director of the Environmental and Occupational Health Sciences Institute (EOHSI), a joint program of Rutgers University and UMDNJ, and also directs the Institute's program in exposure measurement and assessment.



Neil E. Christopher (pre-medicine, '55), a retired physician, was recently elected to The Alabama Healthcare Hall of Fame. To recognize exemplary efforts in the field, this prestigious distinction was established in 1997 to honor Alabama citizens and is awarded every two years by a committee of distinguished healthcare professionals. During his career, Dr. Christopher was affiliated with numerous medical groups, especially those focused on rural medicine. Christopher remains actively involved with Auburn University and serves on the Alumni Association Board of Directors.



Catrina Sims Robinson is the first African-American student to receive a Ph.D. in pharmaceutical sciences from Auburn University. Robinson, who also received her bachelor of science degree in laboratory technology from Auburn, graduated in December, 2007. Robinson distinguished herself throughout her education at Auburn by winning numerous awards including “Outstanding Minority Graduate Student” of the Harrison School of Pharmacy; Harrison School of Pharmacy's “Outstanding Graduate Student of the Year” in Pharmacal Sciences; and Auburn University's “Outstanding Graduate Student of the Year.”



Robinson also won the Outstanding Clinical Laboratory Scientist/Medical Technology Student award for 2004-2005, a national and prestigious award given by the Lambda Tau Honor Society. Currently she is a post-doctoral research fellow in the department of neurology at the University of Michigan Medical School.


THERE ARE
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- Establish a scholarship in your name or a loved one's name.
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- Leave a bequest to COSAM in your will.
- Join a COSAM professional organization:
Society of Health Professionals
or
Society of Women in Sciences and Mathematics

For questions about these or other ways to contribute, contact one of COSAM's development officers:

Tammy Beck Hartwell:
(334) 844-1449 or
becktam@auburn.edu

Sherri Rowton:
(334) 844-1235 or
rowtosj@auburn.edu

A golfer wearing a blue polo shirt, white shorts, and a white cap is captured in the middle of a golf swing on a green. The background shows a grassy area and a body of water.

*14th Annual
Dean's
Scholarship
Golf
Classic*

**Friday, October 10, 2008
Moore's Mill Golf Club**



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Giving



Delicious

Food =

GOOD
CHEMISTRY

W

hat comes to mind when you think of *Smucker*? Do you picture warm buttered biscuits covered in Smucker's® Strawberry Jam? Perhaps the name "Smucker" reminds you of lunches as a child — a sandwich smeared with peanut butter and Smucker's Concord Grape Jelly. Dessert lovers might imagine a scoop of vanilla ice cream seeped in Smucker's Special Recipe Hot Fudge Topping.

While the company's most recognizable products include ice cream toppings, jellies and jams, The J.M. Smucker Company actually manufactures thousands of products. Brand names like Hungry Jack®, Pillsbury®, Martha White®, PET®, and White Lily® are all Smucker-branded products, and behind every Smucker-manufactured good are thousands of employees, working to guarantee high-quality results.

Sweet Success

Darci Svela (microbiology, '90), is one such employee. For 14 years, she has worked with The J.M. Smucker Company in a variety of quality-assurance roles. Currently she is the process operations manager for the Crisco®-brand division of Smucker. She estimates that within a given year, hundreds of millions of gallons of oil are processed at the Ohio-based Crisco manufacturing plant where she works.

"Vegetable oil, corn oil, canola oil, natural blends, and all the shortenings... if it has the Crisco name on it, it comes from here," Svela said.

With a crew of 32 technicians and five managers, Svela notes that the manufacturing process involved in creating edible oil is highly technical.

"We take crude edible oil and refine it so it can be packaged in bottles and cans," Svela explained. "My work is much like working in a chemical refinery — it's a complex process to transform the source oil to the refined, bleached and deodorized product utilized for cooking and baking."

Working in a food-manufacturing plant is not the career Svela envisioned for herself when she graduated from Auburn with a degree in microbiology.

"I thought I'd end up in a university or in some biotech company in more of a development-type role," Svela said.

However, after graduation Svela went to work for a Vermont-based beverage-manufacturing company. When the company was purchased by The J.M. Smucker Company in 1994, she decided to remain in the food-manufacturing business.

"I found I really enjoyed working for Smucker," Svela said of her first years with the company. "I thought Smucker would be too big for me, but it actually turned out to be a great fit. It is a large company that feels like a small company, and they are very people oriented."

Svela said working at Smucker provides an opportunity to learn something new on a daily basis.

"Each day brings a new challenge," Svela said.

Plus, unlike Svela's initial vision of herself working in a laboratory setting, the food-manufacturing plant keeps her on her feet in a fast-paced environment where she consistently interacts with other Smucker employees.

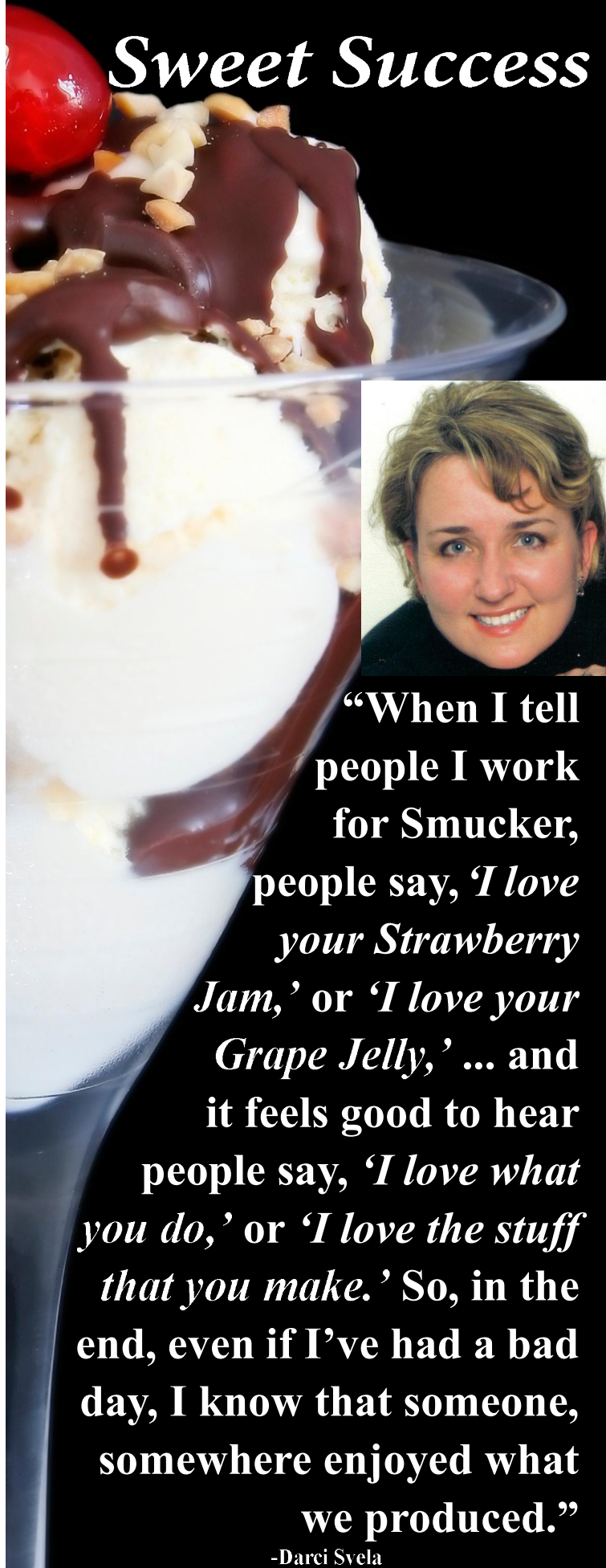
"I am a people person," Svela said of why she enjoys her work.

Despite the dramatic turn her career has taken from the one she imagined for herself in college, Svela said she makes use of her undergraduate degree on a regular basis.

"I do use the fundamentals I learned at Auburn. The science and the math — that absolutely still applies. What we do here is all chemistry based."

So, next time you pick up a can of Crisco shortening in anticipation of baking an old family recipe, or a bottle of Crisco oil to fry a big Thanksgiving turkey, know that behind that Smucker product is not only a lot of chemistry, but also Auburn graduate Darci Svela and her COSAM education.

-Candis Hacker



“When I tell people I work for Smucker, people say, ‘I love your Strawberry Jam,’ or ‘I love your Grape Jelly,’ ... and it feels good to hear people say, ‘I love what you do,’ or ‘I love the stuff that you make.’ So, in the end, even if I’ve had a bad day, I know that someone, somewhere enjoyed what we produced.”

-Darci Svela

Remembering...

HARRY MELVIN PHILPOTT

Harry Melvin Philpott, who served as Auburn University's 11th president from 1965 to '80, died January 28, 2008.

Known for his congenial manner, Philpott was often called a "people person" and friends and colleagues remember him being accessible to all university groups, especially students.

During his tenure, Philpott led Auburn through what was up to that time the university's greatest period of growth. Auburn grew from offering 63 fields of study to offering degrees in more than 140 areas during Philpott's presidency. The schools of business and nursing were formed, the school of arts and sciences was reorganized and several new departments were created. Another achievement during the Philpott years was the university's record in awarding degrees. During his presidency, Philpott awarded more than one-half the total number of degrees given by the university in its then 123-year history. Through March 1980, he had awarded



53,806 degrees, or 55 percent, of the total 98,316 degrees awarded at AU throughout history to that point.

"Dr. Philpott was an inspirational leader and a champion for

Auburn's faculty. His focus on academics is still felt today and represents a substantial part of his legacy," said Auburn University President Jay Gogue. "Susie and I received our degrees from Dr. Philpott, and we consider that a great honor."

One of the first accomplishments of Philpott's administration was the creation of the alumni professorships program designed to retain and attract well-qualified faculty. Fifteen endowed professorships were established in every major area of the university. Two additional alumni professorships were established by the Auburn Alumni Association to recognize the value of the creative arts and to honor persons who achieve distinction in their fields.

He insisted that faculty embrace a personal style of teaching and said, "The university has recruited some of the best minds in the nation to educate its students, but in particular we have tried to find teachers who are interested in young people and their future."

During Philpott's administration, Auburn's ROTC program became optional instead of mandatory and the university's role regarding *in loco parentis*, a Latin term meaning "in the place of a parent," was lessened as the administration dropped curfews for students and allowed female students to live off campus for the first time. Auburn saw a large increase in the enrollment of female students during Philpott's tenure; female enrollment was 28 percent in 1965 compared to 42 percent in 1980 and 49 percent today.

Philpott reorganized the administration with the establishment of four vice presidencies and oversaw the creation of Auburn University at Montgomery, with the first freshmen class beginning its studies there in 1969. He was also involved with efforts to desegregate Alabama's cooperative extension system and fought for greater taxpayer support for higher education, advocating the

intelligent use of the state's dollars.

Philpott expanded a building program that began in the Draughon administration and launched a program of his own. Among the new buildings and changes to Auburn's facilities during Philpott's administration were the completion of Haley Center, Beard-Eaves-Memorial Coliseum, Architecture and Fine Arts Complex, Pharmacy building, complete relocation of veterinary medicine facilities, relocation of the main Agricultural Experiment station to E. V. Smith Research Center in Macon County, and completion of the south women's housing complex (The Hill residence halls).

Philpott served from 1967 to '69 as chairman of the Education Study Commission. Through his role with the commission, Philpott recommended the creation of the Alabama Commission on Higher Education. He served as chairman of the Southern Regional Education Board in 1972.

Philpott's influence was also felt on a national level through his efforts on behalf of the National Association of State Universities and Land-Grant Colleges, where he was president in 1976-77 and chairman of the executive board in 1977-78. He became the second Alabamian to head the association. Leroy Broun of Auburn served as president in 1891.

Born on May 6, 1917, Philpott received his undergraduate degree from Washington and Lee University in 1938 and subsequently began an administrative career there as director of religious activities. He was a Baptist minister and served as a chaplain in the United States Navy during World War II, seeing action with the Third and Fifth Fleets in the Pacific Theater. In 1947, Philpott earned a doctorate from Yale University in religion and higher education.

He taught religion at the University of Florida (1947-52); served as dean of religious life and head of the religion and philosophy department at Stephens College (1952-57); and returned to the University of Florida as vice president (1957-65) before coming to Auburn.

Philpott received an honorary doctor of science of humanities from Auburn in 1981 and continued to live in Auburn after his retirement.

**Courtesy of Auburn University News*

DR. ANDERSON "ANDY" MORRIS

Longtime COSAM Leadership Council member and active college supporter, **Dr. Anderson "Andy" Morris** (pre-medicine, '72), passed away suddenly Sunday evening, December 2, 2007. Morris graduated from medical school at the University of Alabama Birmingham in 1980. An avid football fan, Morris was a member of John W. Heisman Club and enjoyed the gridiron successes of his alma mater. Morris's contributions to the College of Sciences and Mathematics supported the college's continued growth.

COSAM Dean, Stewart Schneller, remembers Morris fondly.

"Whenever I had the opportunity to spend time with Andy, his ongoing passion for science was contagious.



His inquisitive spirit was captivating and refreshing. A recent example was his interest with the physics and mathematics associated with the diverse design of sundials over the centuries. Andy presented engaging and knowledgeable lectures on this topic for which he spent many hours in thoughtful preparation. These have become part of the College's K-12 sciences and mathematics outreach program. In fact, Andy was leading an effort to bring a two-story sundial to our campus with many symbols relating to science and to the Auburn spirit. COSAM will dearly miss his love of our university and his curiosity for seeking an understanding of the basis of the world in which we live and the motivation of cultures to evoke science and mathematics in their quest for being."



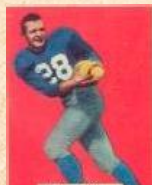
Morris practiced medicine for 27 years, most recently in private practice with CardioVascular Associates in Birmingham. Morris founded and directed the Health South Heart College. As a caring and innovative physician, Morris garnered the praise of patients and fellow health care professionals.

The Birmingham native is survived by his wife of 36 years, Mary Johnson Morris ('72), and daughter Margaret Morris Blackney ('02) and son Pelham Anderson Morris ('00), along with other family and friends.

**Special thanks to the Birmingham News for contributions to this story.*

DAVID H. MIDDLETON

David H. Middleton (pre-medicine, '55), former Auburn football star and Ann Arbor physician, passed away on December 29, 2007. While playing for the NFL's Detroit Lions in the 1950s, Middleton also attended medical school at the University of Tennessee, Memphis. The Birmingham, AL native, known for his positive outlook and love of exercise and sports, is survived by his wife Jeannette (biological sciences, '57) and three children.



WALLACE BRITTON SMITH SR.

Wallace Britton Smith Sr. ('69) of Jasper, AL, died Feb. 19, 2008, at University Hospital in Birmingham. He was preceded in death by his parents, Floyd and Juanita Smith. He is survived by his wife of 47 years, Kay Smith of Jasper, AL; sons, Wallace B. Smith Jr. of Jasper, AL and Stephen H. Smith and his wife, Kelly, of Helena, AL; granddaughter, Julianne Smith of Helena, AL; siblings, James Smith and his wife, Judy, of Gadsden, AL, Carla Pulliam and her husband, Ronald, of Jasper, AL, and Jerome "Jerry" Smith and his wife, Patti, of Parrish, AL; and a host of nieces, nephews, other family members and numerous friends.



Smith received both his master's degree and his doctorate in physics at Auburn, and was a long-time member of the COSAM Leadership Council.

GEORGE W. FOLKERTS



George W. Folkerts was born November 26, 1938, and died December 14, 2007, at his residence. He was a valued member of Trinity Lutheran Church and professor in the department of biological sciences at Auburn University for the past 38 years. He earned a bachelor's degree in zoology and a master's degree in botany from Southern Illinois University, and a doctorate in herpetology from Auburn University.

During his career as a teacher and researcher, Folkerts studied every aspect of nature. His comprehensive knowledge of the plants, invertebrates, and vertebrates inhabiting the Southeast was second to none, and he was a renowned expert in the ecology of disappearing habitat types and declining species.

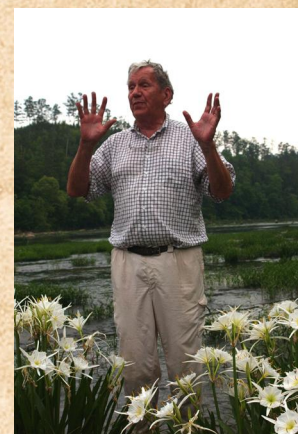
His passion for conserving nature made him a leader for local, state, and national conservation efforts. Part of his legacy for these efforts was his being honored by having multiple native species named after him. In the late 1990s, he led a successful effort to save Auburn University's Davis Arboretum from building encroachment and ensure its preservation as a sanctuary for native plants.

During his tenure as a faculty member at Auburn University, Folkerts was a dedicated professor who loved teaching and was admired by his students. He won numerous teaching awards and exposed countless students to the wonders of the natural world both in the classroom and field. His courses were truly inspirational and his classroom teaching style was one in which students were simultaneously challenged and made to feel comfortable in the presence of a friend or mentor. He has successfully trained many graduate students who have gone on to secure positions as teachers and scientists across the United States.

"He was very patient ... and he gave good advice and you always knew that he was really listening. He was one of those people, where you could not have a conversation without learning something from him," said Anne-marie Hodge, one of Folkert's former students. "I don't think he ever stopped thinking of himself as a student; a student of the world of biology."

Folkerts was kind to all who met him, generous with the time he offered to others, and humble despite his exceptional accomplishments. He had a magnetic personality that enlivened every gathering and made him a beloved member in the local trivia community. He is survived by his loving wife, Debbie; his sister, Trudy; his daughters: Molly and Merrill, and his son, Evan.

**Courtesy of the Opelika-Auburn News with additions by COSAM*



Leadership Council 2007



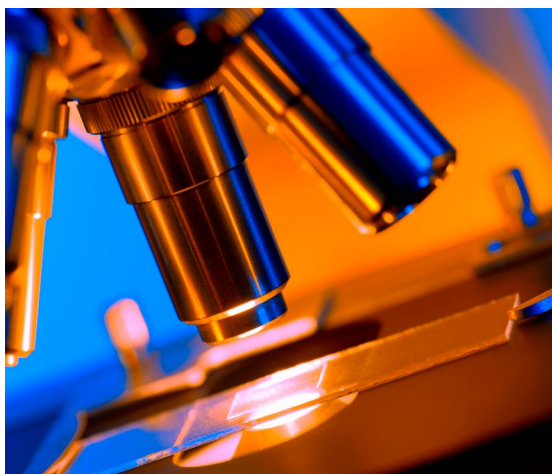
First Row: Gerrie Hansford, Linda Stone, Velma B. Richardson, Suzan Voss, Dan Philen, Chuck Savrda, Hank Hartsfield, Rita Patton, Lani Kaiser, Rosemary Greaves

Second Row: Bill Hansford, Mike Williams, Roger Cox, Danny Wilson, Mike Forster, Mary Lou Ewald, Chuck Horton, Marie Wooten, Vince Cammarata

Third Row: Harold Zallen, Paul DePriest, Earl Hartsfield, Mike Bangham, Barry Wilson, Herb Martin, Bill Johnston

Fourth Row: John Trawick, Charles Taylor, John Weete, Jim Barbaree, Art Merkle, Jim Baird

Fifth Row: Jim Mathews, Jim Ott, Steve Stuckwisch, Bill Hames, Larry Wit, Dean Stewart Schneller, Joe Perez



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