

**Viet Duc Dang** and **Ting Shao** were selected as the recipients of Graduate Student Awards from the Division of Environmental Chemistry of American Chemical Society. Each year the Division of Environmental Chemistry recognizes up to 25 graduate students nationwide. The award is based upon students' records in course work, evidence of research productivity, and on statements from graduate faculty advisers. Primary emphasis is given to the students' potential for future contributions as professionals in environmental chemistry.

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The National Science Foundation offers 3-year graduate research fellowships (NSF GRF) to students in science, engineering, mathematics, technology, and some social sciences. These are very prestigious awards. **Jaclyn Ellerie**, Environmental Engineering & Science graduate student was awarded honorable mention.

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### EEES Students at the South Carolina Environmental Conference



Jaclyn Ellerie, Peng Xie, Onur Apul, Tony Johnston, Daniel Lewis, Xiaojie "Jane" Gan and Meric Selbes

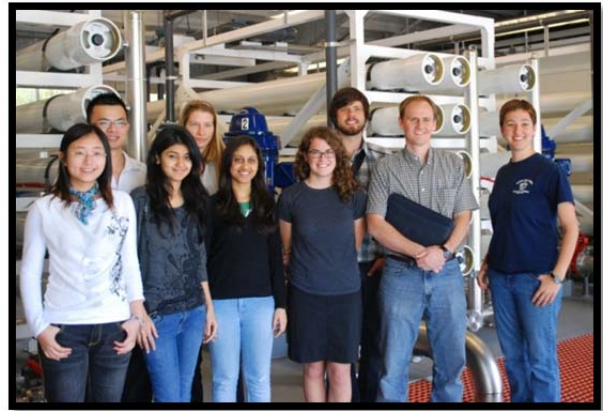
EEES graduate students (see the attached picture for the names) attended South Carolina Environmental Conference, March 12-15, 2011 and made poster presentations. EEES Students collected all three awards for the Student Poster Competition. Meric Selbes received the first place award and was selected to represent AWWA SC Section at the Fresh Ideas Poster Competition during the AWWA National Meeting in Washington, DC this summer. Daniel Lewis and Xiaojie "Jane" Gan received the second and third place awards, respectively.

Tony Johnston made a platform presentation entitled "Evaluating the Energy Use and Greenhouse Gas Emissions of Water Utilities". Christina Anderson and Andrea Hicks received the A. Ray Abernathy Fellowship and L.G. Rich Awards, respectively, during the Water Environment Federation luncheon at the conference.

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**Dr. Ladner's research group toured the RO Plant in Hilton Head, SC**

The Ladner research group visited the reverse osmosis water treatment facility that provides drinking water to Hilton Head Island, SC. The facility is unique in that its water source is over 3,000 feet deep and hot from geothermal activity. The water is cooled before passing through the RO elements that remove bicarbonate, sulfate and other ions. The Ladner group gained insight about how real-world membrane processes operate; this will help them in their efforts to develop next-generation membrane technologies.



Back: Peng Xie, Jaclyn Ellerie, Dan Carey  
Front: Ying Sun, Pooja Mistry, Pooja Mahajan, Muriel Steele, Dr. David Ladner, Megan Smith



On April 27, 2011, **Jim Chamberlain** was awarded a Paul Harris Fellow by Rotary Club International for his work in El Salvador. For the past three years, Jim has taken Clemson engineering students down to survey, prepare, and design drinking water supply systems to rural developing communities.

Their work has resulted in three Rotary grants (totaling \$75,000) that are part of a collaborative effort bringing water to over 13,000 native residents.

**Sarah Rudy** was selected by the Savannah River Branch of the Health Physics Society to be the 2011 recipient of the Roscoe Hall Memorial Scholarship from Clemson University. Sarah will receive her award on Friday April 29 in North Augusta, SC

**Diana Delach** gave a platform presentation, "Chiral Signatures of Subsidiary PCBs in Spiders along an Exposure Gradient", at the Carolinas SETAC meeting at Appalachian State University in Boone, NC, on March 25, 2011. She was also honored for her cabinet position, Secretary of Transportation and parking, for Graduate Student Government at a reception hosted by the Clemson Board of Visitors on April 21, 2011.

## Department Inaugurates AWWA/WEF Student Chapter



**Dr. Tanju Karanfil** introduces the new AWWA/WEF chapter to interested students at the kickoff meeting in March 2011.

This March the department inaugurated a joint student chapter of the American Water Works Association (AWWA) and the Water Environment Federation (WEF). These organizations give students opportunities for professional development in water and wastewater careers. Morgan Young from the engineering firm Black and Veatch has been the main organizer from the industrial side, working with **Dr. Karanfil** to get the chapter up and running. **Dr. David Ladner** is now serving as the faculty advisor. Over sixty students came to the first two meetings, getting the chapter off to an excellent start. If you want to get involved, email [ladner@clermson.edu](mailto:ladner@clermson.edu).

**Dr. Moysey's** hydrogeophysics group has been extremely busy this spring with 13 conference presentations! In April alone the group made three presentations at the department's Hydrogeology Symposium and had a strong presence (six presentations) at the Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP) in Charleston, SC. At SAGEEP, **Dr. Moysey** gave a featured luncheon presentation about the group's sustainable watershed research in India that has been sponsored by the Geoscientists *Without Borders* program.



Zuolin Liu, Na Hao, Adam Mangel,  
Sudershan Gangrade, and Erasmus Oware

In May, student **Adam Mangel** will present preliminary subsurface imaging results from our impressive new multi-channel radar system in a poster to be given at the NovCARE 2011 conference in Cape Cod.

After participating in the International Association for the Study of the Commons meeting in Hyderabad, India this January, **Dr. Moysey** also taught a 3-day workshop titled "*Practical monitoring strategies for scientifically-based watershed management*" in Ujjain, near his research site. The short-course was aimed at NGO, government and student participants and will be used to help the Foundation for Ecologic Security (FES) initiate a large-scale monitoring program of about 400 watersheds in southern India.

### Clemson Undergraduates Study Geology and Culture of Bahamas during Spring Break



Twenty-one Clemson undergraduate students, accompanied by **Dr. Jim Castle**, **Scott Brame** and graduate assistant **Catherine Ruprecht**, participated in a one-week field trip to Andros Island in the Bahamas. Andros is famous among geologists as a world-class location for studying modern carbonate sediments and the third-longest barrier reef in the world. Students hiked across a vast tidal mudflat, investigated dramatic ooid shoals, and snorkeled incredible reef environments. A cultural highlight of the trip was meeting with a traditional bush doctor and other Bahamians in the remote village of Red Bays. The trip included a visit to one of the many unique well-fields that supplies water for transport by tanker ship to Nassau.



**Dr. Castle** reports that it was the students' high level of interest and tremendous enthusiasm that made the trip to Andros a success. Each student contributed in a special and unique way, making the trip memorable for all. The remarkable experiences of the trip to Andros were captured in songs composed and performed by Austin Barrett and in a video series produced by Carly Summers. You can listen to Austin's songs and watch a one-minute video trailer by Carly at <http://www.clemson.edu/ces/geo375/geo375songsvideo.htm>. Both Austin and Carly are members of the Calhoun Honors College.

The trip to Andros was part of Geology 375/H375 (Bahamian Field Study), a course developed and taught by Jim Castle since 2001.

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### RECENT PUBLICATIONS

**Grogan, Kelly P.** and **DeVol, Timothy A.** 2011. Online detection of radioactive iodine in aqueous systems through the use of scintillating anion exchange resin. *Analytical Chemistry*. 83: 7: 2582-2588.

**Viet Dang**, PhD candidate working with **Dr. Cindy Lee**, recently published "Historical Changes of PCBs in Twelve Mile Creek Sediments, SC, USA" in the *American Journal of Environmental Science*



**Amy Hixon** had a baby girl at 6:56 am on Sunday, March 27<sup>th</sup>. Adelaide Ann weighed 8 lbs. 10 oz. and was 22 ins. Long; with lots of dark hair! Amy, Spencer, and Adelaide are all doing well.



**Fei Chen** and his wife are very happy to announce the arrival of their first baby, William W. Chen. William was born on April 21<sup>st</sup> and weighed 6 pounds, 3 ounces. Mom and baby are doing well.

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## HYDRO SYMPOSIUM

The 19<sup>th</sup> Annual Clemson/David S. Snipes Hydrogeology Symposium was held on April 7 at the Madren Center along with field trips on the Chattooga River on April 8 and April 9. This year's event attracted over 300 attendees with most from SC but others coming from NC, GA, TN, VA, MS, and FL. There were fifty oral and poster presentations given over three consecutive sessions. The theme sessions covered innovative techniques for groundwater and soil remediation using oxidation technologies, CO<sub>2</sub> sequestration, Constructed Wetland Treatment Systems, well and stream monitoring networks, bioremediation, stream and watershed hydrology, and the Geology undergrad Creative Inquiry projects.

**Dr. Ron Falta** presented research on dissolved CO<sub>2</sub> exsolution from brines, **Dr. Larry Murdoch** gave a talk on using casing deformation to monitor CO<sub>2</sub> injection, and **Dr. Stephen Moysey** discussed detection of preferential multiphase flows in the subsurface. Graduate students giving oral presentations included **Dave Hisz, Kirk Ellison, Catherine Ruprecht, Chris Patterson, Kristen Jurinko, Tina Ritter, Michael Pardue, Alex Beebe, Clay Freeman, Rich Hall, Dan Matz, Fei Chen, Adam Mangel,** and **Johnathon Ebenhack**. Recent graduates **Jim Henderson** and **Dan Matz** returned to give talks as well. A complete list of presenters and the titles of their talks can be found at: <http://www.ces.clemson.edu/hydro/symposium/speaksched.htm>

In addition to the posters, 28 exhibitors from around the US displayed their products and services. After the symposium, a mixer was held at the Geology Museum.

The field trips were led by **Scott Brame**. They consisted of a river level examination of the rocks and processes that have shaped the morphology of the Chattooga River. The best way to do this is by floating down the river so participants paddled inflatable kayaks through the Class 2 and 3 rapids. Stopping at selected outcrops, they observed the geologic processes at work that have shaped the current form and nature of the river.



## CONGRATULATIONS HYDRO!!

The EEES Hydrogeology Program is listed as a top 100 program by the National Ground Water Association (NGWA). More than 400 programs were considered. The list can be found at: <http://www.ngwa.org/students/hydrogeology-programs.aspx>

### SPRING PICNIC



The EEES annual Spring Picnic was held Saturday, April 30<sup>th</sup> at Nettles Park in Clemson.

Children played, food was eaten, the weather was cooperative, Jim Chamberlain and others were pickin' and grinnin' under the trees and enjoyment was high.

The faculty once again challenged the students to a soccer game during which the students showed the faculty once again how to play soccer; further adding insult to injury, they also showed the faculty how to play softball...only minor casualties were reported. Perhaps next year, the faculty will be better...or not!



## Dr. Gene Rich Turns 90



Gene Rich and son, Graham

Dean Linvil “Gene” Rich’s 90<sup>th</sup> birthday was celebrated in April by the Department of Environmental Engineering and Earth Sciences after a seminar by his son, Graham Rich of Arkansas Central Water, on the “Implementation of Total Water Management Strategies to Improve Water Quality and Achieve Regulatory Compliance with EPA’s Safe Drinking Water Act.”

After serving with Patton’s Army in World War II, **Gene** received his undergraduate and graduate degrees at the Virginia Polytechnic Institute. He taught sanitary engineering at the Illinois Institute of Technology. In 1960, he was appointed head of the Department of Civil Engineering at Clemson. Shortly after he arrived, he was named the Dean of Engineering to fill the position vacated by the death of the former dean.

During his tenure as dean, **Gene** transformed the College of Engineering from an undergraduate teaching program at a former military school to an engineering college with graduate teaching and research. He put Clemson on the map by establishing one of the first stand-alone environmental engineering departments. He hired **Ray Abernathy, John Andrews, Ben Dysart, and Tom Keinath**, who built a graduate program



Dean Rich and Dean Gulari

in environmental engineering with national recognition. In the 1960s, Dr. Rich and the faculty held summer courses in environmental engineering for faculty members from around the country. These propelled many schools to teach environmental engineering, which helped grow environmental engineering from a subset of civil engineering into today’s profession.

**Gene** played early roles in many professional societies including the American Academy of Environmental Engineers (AAEE) and the Association of Environmental Engineering and Science Professors (AEESP). He has been a Board Certified Environmental Engineer for over a half century. He has been recognized by a number of professional awards including Fellow Member and the Hering Medal of the American Society of Civil Engineering, the Founder’s Award of the Association of Environmental Engineering and Science Professors.





**The Rich Laboratory at Clemson** was named in his honor. He was presented with South Carolina's Order of the Palmetto this spring for his contributions to South Carolina.

Most of all, we are pleased to say that **Gene** is still among us serving as a role model for environmental engineering faculty. We benefit from his contributions and are happy to experience his humor and joy of life.

**Dr. Cindy Lee** presented the short course "Using Structure to Predict Behavior: Legacy and Emerging Contaminants" at the University of Costa Rica upon the invitation of the Centro de Investigacion en Contaminacion Ambiental from March 14 to 18, 2011.



**Dr. Tanju Karanfil** made two invited presentations at the 17th Southeastern Regional Technology Conference in Greenville on January 27-28, 2011 organized and sponsored by South Carolina Section of American Water Works Association and the Water Environment Federation. The titles of **Dr. Karanfil's** presentations were: "Formation and Control of Disinfection By-Products: an Overview towards Stage 2 D/DBP Rule" and "Formation and Control of Disinfection By-Products: Considerations for Applications"

**Dr. Brian Powell** was selected to receive the prestigious 2011 Outstanding Young Investigator Award for the Clemson University chapter of Sigma Xi. This is an important recognition of Dr. Powell's scholarly accomplishments and contributions to the Department and University.

**Dr. Alan Elzerman** presented a paper at the meeting of the Division of Environmental Chemistry of the American Chemical Society held in Anaheim in March titled "Teaching water chemistry to diverse student groups: What are the core issues?" The paper was part of the symposium New Perspectives and Approaches to Teaching Water Chemistry. It gave **Dr. Elzerman** the opportunity to assess what he observed and learned in over 30 years of teaching this course for EEES at Clemson and to make suggestions for future offerings of this course to diverse groups of students.

**Drs. Tanju Karanfil** and **Cindy Lee** helped Dr. Steve Klaine of the Clemson Institute of Environmental Toxicology to host a visiting delegation from Vietnam, which included Dr. Bui Duy Cam, President of Hanoi University of Science, VNU; Ms Nguyen Hoang Oanh of the Department of International Relations of Hanoi University of Science, VNU; and Dr. Nguyen Thi Le Huong, Deputy Director of the Department of Higher Education from the Ministry of Education and Training for the government of Vietnam. President Cam signed a Memorandum of Understanding (MOU) with President Jim Barker during the visit. The MOU will enable Clemson University to develop joint educational programs with the Hanoi University of Science, VNU.

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**Dr. Tanju Karanfil** received a grant (\$324K) entitled "'Formation of Halonitromethanes and Nitrosamines during Ozonation in Drinking Water,' from National Science Foundation. In addition, Arch Chemicals, Inc. made a gift award of \$36K to Clemson University to support **Dr. Karanfil's** research on formation of disinfection by-products in swimming pools.

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#### RECENT PUBLICATIONS

Wei, Na, and **K.T. Finneran**, 2011, Microbial Community Composition during Anaerobic TBA Mineralization in Fuel Contaminated Aquifer Material, *Environ. Sci. Technol.*, 45(7), 3012-3018

Mohatt, J.L., Lanhua Yu, **K.T. Finneran**, and T.J. Strathmann, 2011, Microbially Mediated Abiotic Transformation of the Antimicrobial Agent Sulfamethoxazole under Iron-Reducing Soil Conditions, *Environ. Sci. Technol.*, In Press, DOI:10.1021/es200413g.

Shan, H., H. D. Kurtz, Jr., N. Mykytczuk, J. T. Trevors, and **D. L. Freedman**. 2010. Anaerobic biotransformation of high concentrations of chloroform by an enrichment culture and two bacterial isolates. *Appl. Environ. Microbiol.* **76**:6463-6469.

Shan, H., H. D. Kurtz Jr., and **D. L. Freedman**. 2010. Evaluation of strategies for anaerobic bioremediation of high concentrations of halomethanes. *Water Research* **44**:1317-1328.

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## EEES mourns the loss of Professor John F. Andrews

**Professor John F. Andrews**, 80, passed away on April 10, 2011, in Fayetteville, Arkansas where he spent his retirement years. **Professor Andrews** received his PhD from the University of California, Berkeley. Upon graduation in the early 1960's he taught environmental engineering at the University of Arkansas for a short period before accepting the second faculty position in Clemson University's newly established master's and doctoral environmental engineering program which was housed in the Department of Civil Engineering at Clemson. His charge, given to him by **Dean Linvil**



**"Gene" Rich** who established the program, was to build the environmental engineering program, called sanitary engineering in the 1960's, within the Department of Civil Engineering. In 1968, **Dean Rich** administratively moved the program from Civil Engineering and established a separate department called the Department of Environmental Systems Engineering. **Professor Andrews**, serving as department chair of the new department, made a number of critical hires in the ensuing years building the program to one which became highly regarded by peer institutions of higher learning throughout the United States. Later in his career, **Professor Andrews** accepted a position at the University of Houston and subsequently at Rice University from which he retired.

**Professor Andrews'** lasting legacy at Clemson University was that he insisted on maintaining a high level of very high quality innovative research and publication which became institutionalized in Clemson's department, now called Environmental Engineering and Earth Sciences. As a result the department became highly ranked nationally and internationally.

His personal research focused on biological wastewater treatment technologies with a special focus on the automation and control of those technologies. This led him to establish the Automation and Control Specialty Group in the International Water Quality Association which now is called the International Water Association. **Professor Andrews** proposed and organized a number of Specialty Group conferences held at venues throughout the world. As a result he became known as "the" most highly regarded academic in the field of automation and control of wastewater treatment plants. **Professor Andrews** was a veritable "idea man" that is virtually unparalleled throughout the environmental engineering profession. This is his legacy to his profession.

## CONGRATULATIONS!!!

**Jia Hu's** doctoral dissertation "Exploring Formation and Distribution of Halonitromethanes in Drinking Waters" was selected as one of the best doctoral dissertations completed in 2010 by American Water Works Association. **Jia** will receive her award (and a \$3000 check) at a ceremony during the Annual Meeting of American Water Works Association in Washington, DC this summer. **Dr. Karanfil**, **Jia's** doctoral research advisor, will be recognized with a plaque at the ceremony.

**Andrea Hicks** (MS'10) has been accepted to the PhD program in Civil and Materials Engineering at the University of Illinois at Chicago. She will be working with Dr. Tom Theis investigating the life cycle assessment of nanomaterials used in building construction. Andrea received her MS with **Dr. Cindy Lee**.

**James Cashwell** (MS'00) delivered the Alan Elzerman Seminar Series Lecture on March 4, 2011. James is a Senior Associate in Environmental Remediation for the Corporate Environmental Group for Olin Corporation. He met with students interested in a career in environmental consulting during his visit. **James** worked with **Dr. David Freedman** during his studies at Clemson.

## NEW JOBS FOR RECENT GRADUATES

**Arika Bridhikitti** defended her dissertation titled "Applications of moderate-resolution remote sensing technologies for surface air pollution monitoring in Southeast Asia" on April 19<sup>th</sup>. **Dr. Tom Overcamp** is her advisor.

**Tess Brothersen** co-advised by **Drs. Cindy Lee and David Freedman**, successfully defended her PhD dissertation "Identification and Characterization of Polychlorinated Biphenyl Dechlorinating Microorganisms from Lake Hartwell, SC" on April 11, 2011. Tess will continue to work for Tetra Tech supporting one of the largest private remediation projects in the country.



**Jim Chamberlain:** "Environmental and Economic Implications of Switchgrass Grown for Bioenergy in the Southeastern United States" was the dissertation that Jim defended on March 3<sup>rd</sup>.

**Derick Kopp** has accepted a position in Atlanta for Sage Environmental Consulting. He successfully defended his thesis on April 6<sup>th</sup>.



**Gavin Wiggins** successfully completed his MS degree in EE&S and at the same time, will receive his MS in Mechanical Engineering. **Dr. Tom Overcamp** is Gavin's EE&S advisor.

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**Tara Matheny** defended her thesis "Investigation of a Novel Method for Polonium-210 Determination in Groundwater." She has accepted a position at Duke Energy in the Radiation Protection group at the McGuire Nuclear Power Plant, Huntersville, NC. **Dr. Tim Devol** is **Tara's** advisor.

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*The next issue will be published in August, 2011. Please send your submissions for your activities during Spring and Summer to Jan Young ([ej@clermson.edu](mailto:ej@clermson.edu)) latest by August 1, 2011. (Please do not forget to take pictures).*

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**THANK YOU!**