

# EEES NEWS

## Student News

Summer, 2009

**Hari Shankar Peethambaram**, a current EE&S graduate student, was selected as a recipient of The Ivanhoe Foundation Fellowship (\$5,000).

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**Jesse Addison, Darryl Jones, Jia Hu** and **Dr. Tanju Karanfil** attended AWWA Annual Conference in San Diego in June. Jesse received the Best M.Sc. Thesis 2nd Place Award and Darryl received 2009 AWWA Lars Ph.D. Scholarship. Darryl also made a presentation entitled "The Formation and Speciation of Iodo-Trihalomethanes during Monochloramine and Chlorine/Ammonia Disinfection". Jia represented South Carolina at the Poster Session with her poster "Formation and Speciation of Halonitromethanes: the Effects of pH, Bromide and Nitrite," Jia was awarded 2nd Place for the Fresh Ideas Award of the Poster Session.



**Jim Chamberlain** presented a paper at the American Society of Engineering Education (ASEE) conference in Austin, Texas, on June 15. The title of his presentation was "Forming a Culture of Engineering: Undergraduate Research Projects in a Developing Country".

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**Arika Bridhikitti** presented the following platform papers:

**Arika Bridhikitti** and **Dr. Tom Overcamp**, "Comparison of MODIS Aerosol Products and AERONET and Their Dependences On Land Surface Brightness and Aerosol Type: The Study in Southeast Asia," Annual Meeting of the Air & Waste Management Association, Detroit, MI, June 16-19, 2009.

**Arika Bridhikitti** and **Dr. Tom Overcamp**, "Understanding Optical Characteristics of the Southeast Asia's Regional Aerosol," Annual Meeting of the Air & Waste Management Association, Detroit, MI, June 16-19, 2009.

**Arika** also gave a student poster entitled: "Observing the Long-Range Transport of Chinese Urban Aerosol to Southeast Asia Mainland".

Presentations were given at the Methods and Applications of Radioanalytical Chemistry (MARC VIII) Conference in Kona, HI on Tuesday April 7, 2009. They include:

Plutonium uptake velocity in Zea mays (corn) and implications for plant uptake in the root zone – **Shannon Thompson, Dr. Fred Molz, Dr. Robert Fjeld**, and Dan Kaplan.

Proportional counting of tritium gas generated by polymer electrolyte membrane electrolysis - **Aurelie Soreefan and Dr. Tim Devol**.

Pertechnetate Selective Scintillating Ion-Exchange Resins Prepared by ATRP for On-Line Water Monitoring, **Ayman Seliman** A. Samadi , S.M. Husson , E.H. Borai , **Dr. Tim DeVol**.

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“Plutonium Transport in Plants: Experimental Determination of Transport Velocity in Live Plants and Sorption to Plant Xylem,” **Shannon Thompson, Dr. Robert Fjeld, Dr. Fred Molz**, Dr. Dan Kaplan was presented at the Health Physics Society annual meeting Minneapolis, MN July 12-16, 2009

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EEES student **Todd Miller** gave a presentation at the 238th American Chemical Society Meeting in Washington DC titled “Determination of Subsurface Transport Parameters of Neptunium in Southeastern U.S. Soils” which was coauthored with **Amy Hixon** and **Dr. Brian Powell**.

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Ph.D. candidate **Shannon Thompson** and **Dr. Fred Molz** have been performing plutonium uptake experiments on corn grown at the Rich Laboratory. The experiments are showing that the plant water uptake system, which supplies water for transpiration and plant growth, can result in the rapid transfer of plutonium from the soil to the plant tops. When plants are cut or die naturally, such plutonium may be deposited on the soil surface. This is of potential concern, because small amounts of ingested or inhaled radioactive plutonium can be dangerous. Given the chemical nature of ionic plutonium, this rapid transfer was unexpected, and it may be due to the corn mistaking plutonium for iron, a mineral necessary for plant growth. Many plants, particularly grasses, have evolved a specialized chemical transport system for obtaining iron from soil. Since iron is similar in a molecular sense to plutonium, plants may absorb plutonium by mistake when it is present in soil due to radioactive accidents or waste disposal.





**Chris Patterson**, left, and **Catherine Ruprecht** perform a test on the 18 Mile Creek in Pendleton Thursday, June 18, 2009.

Sixteen students from across the country has come to participate in the Clemson University Hydrogeology Field Camp that lasts 5 weeks and provides hands-on activities for graduate and undergraduate students



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This summer **Amy Hixon** worked as a Student Scientist at the US Nuclear Regulatory Commission in Rockville, MD. Amy worked with the Environmental Review Branch to develop knowledge management resources and update existing guidance documents related to the National Environmental Policy Act. Amy is pursuing her Ph.D. with **Dr. Brian Powell** as her advisor.

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On May 4<sup>th</sup>, ten Clemson engineering students traveled to El Salvador for their second Engineers Without Borders (EWB-USA) site assessment and work trip. Led by EEES grad student, **Jim Chamberlain**, the student group surveyed field elevations for a future water line, evaluated a home wood stove design, repaired a Hydram water pump, collected GPS points for a comprehensive agricultural map, analyzed water quality samples, and helped build foundations for block village houses. The group continues to help design a new water distribution system, with the help of **Sam Sarkar**, an EEES Masters student. **Dr. Mark Schlautman** is a co-advisor of the EWB-USA chapter and **Jose Alfaro** will be working with the group in the coming year on this and other international sustainability projects.



**Viet Duc Dang** and Anh vu were married on August 16 in Vietnam  
Congratulations!!!!

Viet is getting his Ph.D. under the direction of **Dr. Cindy Lee**

## Defense of the Tenacious Tiger Trophy

On October 31<sup>st</sup> 2009, teams of faculty, students, and alumni are invited to compete against each other in the Spinx Run Fest 5k and half-marathon in Greenville, SC. Teams must have a minimum of three members with at least one person running in each race (5k and half-marathon). Last year the competition was held at the Thunderroads Marathon Relay in Charlotte, NC and the faculty handed the students and alumni teams a decisive win. This year the competition will be fierce as the students and alumni attempt to take the Tenacious Tiger Trophy away from the faculty.



Since the spirit of the competition is not just about who can run the fastest, the following criteria will be used to determine the winning team:

1. Total number of participants on each team (highest number is awarded the most points)
2. Fastest average 5k time for each team (fastest time is awarded the most points)
3. Fastest average half-marathon time for each team (fastest time is awarded the most points)
4. Average team age (highest average age is awarded the most points)
5. Best dressed team (as voted by the fans)
6. Best fan support (as voted by the runners)
7. Most carbs consumed at the carb-loading dinner the night before the race
8. Other??

### For more information please contact:

Faculty Team: Shelie Miller ([millers@clemson.edu](mailto:millers@clemson.edu)) or Brian Powell ([bpowell@clemson.edu](mailto:bpowell@clemson.edu))

Alumni Team: Jim F. Chamberlain, [jfchamb@clemson.edu](mailto:jfchamb@clemson.edu))

Student Team: Dan Matz ([dmatz@clemson.edu](mailto:dmatz@clemson.edu)) or Jose Alfaro ([jalfaro@clemson.edu](mailto:jalfaro@clemson.edu))



Participants from the 2008 competition at the Thunderroads Marathon Relay in Charlotte, NC. Pictured are (front row, from left) Dina Mauldin, Jim Chamberlain, Tara Matheny, (back row) Darryl Jones, Treavor Kendall (with Alden), Brian Powell, Shelie Miller, Dan Matz and Amy Hixon.

## The Environmental Engineering and Earth Sciences Welcome Back Picnic



### Welcome new graduate students:

<b>Christina Anderson</b>	<b>Andrea Kirchoff</b>
<b>Onur Apul</b>	<b>Derrick Kopp</b>
<b>Miles Atkinson</b>	<b>Matthew Longshore</b>
<b>James Cooper</b>	<b>Adam Mangel</b>
<b>Michael Eckstein</b>	<b>Jerrod Moore</b>
<b>Kirk Ellison</b>	<b>Michael Pardue</b>
<b>Xiaojie "Jane" Gan</b>	<b>Christina Ritter</b>
<b>Jean Glenn</b>	<b>Catherine Ruprecht</b>
<b>Na Hao</b>	<b>Ben Sharp</b>
<b>Anthony Johnston</b>	<b>Gavin Wiggins</b>
<b>Kristen Jurinko</b>	

**CONGRATULATIONS GRADUATES AND GOOD LUCK WITH YOUR FUTURE!!**

May 2009

Stefanie Fountain  
Hufieng Shan  
Aurelie Soreefan  
Pham Phung

August 2009

Darryl Jones  
Olivia Orr  
Saumya “Sam” Sarkar  
Meric Selbes

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**THE DEPARTMENT OF ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES**

**Faculty, Staff and Graduate Students- 2009-2010**





The hydrogeology graduate student office, Brackett 201, was renovated over the summer. Faculty, students, and staff worked to clean out the office. The walls were painted, the carpets were cleaned, and a professional work environment was created. Despite the budget constraints for the project, the EEES team pulled together for amazing results! Great job everyone!

**THANKS to ANNE and KEN for organizing the renovation of 201 Brackett!**



## Faculty News

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**Dr. Leslie Grady** and **Dr. Bill Hiatt** (Ph.D., EE&S) were selected to receive 2009 Rudolf Industrial Waste Management Medal from Water Environment Federation for their publications in the Water Environment Research journal:

**Hiatt, W. C.** and **Grady, C. P. L. Jr.**, "An updated process model for carbon oxidation, nitrification, and denitrification", Water Environment Research, 80, 2145-2156, 2008.

**Hiatt, W. C.** and **Grady, C. P. L. Jr.**, "Application of the activated sludge model for nitrogen to elevated nitrogen conditions", Water Environment Research, 80, 2134-2144, 2008.

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**Dr. Tom Overcamp** was presented with the Outstanding Associate Editor Award, Journal of the Air & Waste Management Association (2009).

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**Dr. Brian Powell** organized a symposium titled "Recent Advances and Future Directions in Modern Nuclear Science: Graduate Student Research" at the 238th American Chemical Society Meeting in Washington DC.

Additional presentations by EEES students and faculty within other symposia at the ACS meeting were:

"Nuclear Environmental Engineering and Science at Clemson University" by **Dr. Brian Powell**, **Dr. Tim DeVol**, and **Dr. Robert Fjeld**. This presentation highlighted the multidisciplinary nature of the Nuclear Environmental Engineering and Science program within EEES.

"Plutonium transport in Savannah River Site (SRS) Soil: Apparent importance of biochemistry" by **Dr. Deniz I. Demirkanli**, **Dr. Fred Molz III**, **Shannon Thompson**, **Dr. Robert Fjeld**, **Dr. Daniel I. Kaplan**, and **Dr. Brian Powell**.

"Structural characterization of plutonium colloids associated with goethite and silica" by **Dr. Brian Powell** with collaborators from Lawrence Livermore National Laboratory **Zurong Dai**, **Annie Kersting**, and **Mavrik Zavarin**.

"Development of an On-line Radiation Detection and Measurements Laboratory Course" **Dr. Tim DeVol**, **Dr. Brian Powell** was funded by the U.S. Nuclear Regulatory Commission Education Grant.

Application of Classical and Bayesian Statistical Methods to On-Line Radiological Monitoring Data. **Dr. Tim DeVol**, and **Gohres, AA**.

"Comparing Predicted Cancer Risks Associated with Ingesting Naturally Occurring Radionuclides in Drinking Water Supplies to Actual County Cancer Rates," **Dr. Deborah Falta**, **Dr. Tim DeVol**



and **Dr. Robert Fjeld**, presented at the Health Physics Society annual meeting Minneapolis, MN July 12-16, 2009.

Characterization and Application of Superlig® 620 Solid Phase Extraction Resin For automated Process Monitoring. **DeVol, TA**, Clements, JP, O'Hara, MJ, Egorov, OB, Grate, JW.

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**Dr. Tanju Karanfil** gave an invited lecture entitled "Formation and Control of Disinfection By-Products" at the SC AWWA Partnership for Safe Water Committee Workshop in Columbia, South Carolina, on May 20, 2009.

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A major proposal (\$1.2M/year for 5 years) led by Lawrence Livermore National Laboratory where our **Dr. Brain Powell** was a task leader was selected for funding under the Scientific Focus Area within the DOE Environmental Remediation Science Program (ERSP). This is a highly visible portion of the ERSP. Brian will lead the research (\$125k/year for 5 years) on the subsurface transport of transuranic elements (Pu, Np, Am, Cm) with his students. The project will start in the Fall of 2009.

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The EPA STAR proposal entitled "Understanding and Managing Risks Posed by Brines Containing Dissolved Carbon Dioxide" (~\$900K) by **Dr. Ron Falta, Dr. Larry Murdoch** and Sally Benson (Stanford University) was selected for funding. This is a significant accomplishment due to very competitive nature of STAR grants as well as the CO2 area that we would like to be more closely involved. The project will kick off sometimes in the Fall.

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Zenon Thomas John Moysey, son of **Stephen** and **Nadia Moysey**  
Born 2:20 pm, Tuesday, August 04, 2009!  
Zenon weighed 9.1 lbs., 21 oz. and is welcomed home by his big sister Anya.

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**Dr. Cindy Lee**, her husband Riley, and daughter Lee covered 77 miles on the Greenbrier River Trail in wild, wonderful WV over three days in late July.



## Alumni News

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**Richard Edwards** has worked for Pfizer for 31 years, but has recently begun a 6 month Fellowship in Pfizer's Global Health Fellows program. Richard is supporting the Water Aid Uganda program as a Senior Wastewater Advisor doing a number of different things. Most notably, He is establishing a summary of best practices for the Water, Sanitation and Hygiene (WASH) projects that have already been completed. This is for future use.



Also, if you wanted more on the Pfizer program and what Richard is doing, Pfizer has some materials, including some work done by Pfizer writers. You can also find a journal written by Richard at the Pfizer web site: <http://globalhealthfellows.pfizer.com> using logon id and password as **richard** and **edwards**, respectively.

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**Michael P. Harris**, one of our Geology Alumni (1972), and his wife were two of the US passengers in the catastrophic Air France accident that happened June 1, 2009. Our heartfelt sympathy goes out to their families.

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Sylvia Navratil, the wife of **Jim Navratil**, EEES emeritus faculty, passed away on the 4<sup>th</sup> of July. Sylvia was a lovely woman, wife and mother and will be missed by all.

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***The next issue will be published in February 2010. Please send your submissions for your activities during fall to Jan Young (ej@clemson.edu) latest by January 15, 2010. (Please do not forget to take pictures).***

**THANK YOU!**