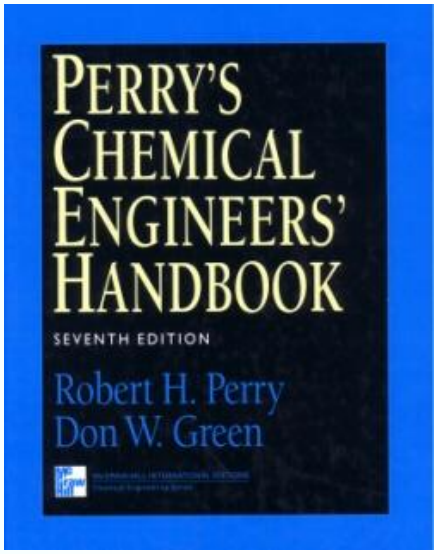
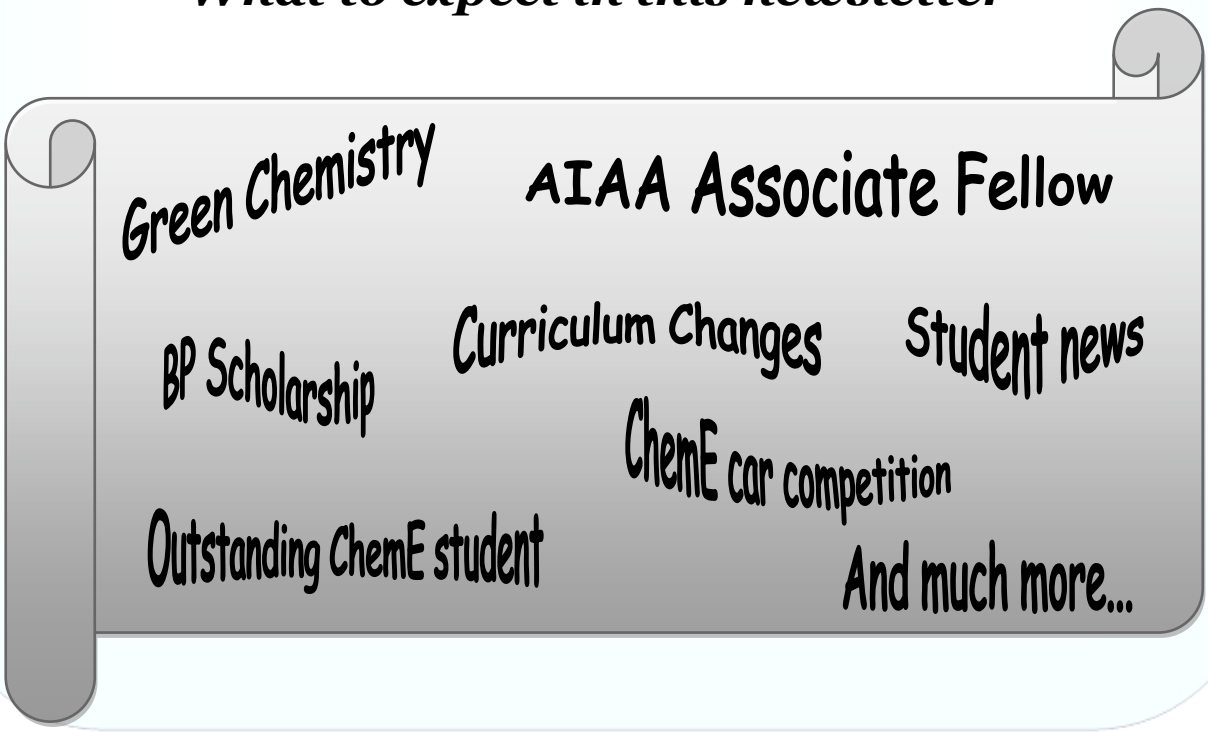
UAHuntsville
THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
COLLEGE OF ENGINEERING
Chemical & Materials Engineering Newsletter
2012



Welcome back to your Chemical Engineering Home!

We are delighted to bring you this issue of our departmental news letter. Our objective is to let you all know as to what is going on in your academic home. We will include information about our faculty (new and old), about what our current (and recently graduated) students are doing and other odds and ends. We would like to use this to keep you updated about the latest news at UAH and the Chemical and Materials Engineering department.

What to expect in this newsletter



Research Paper by Rodrigo Teixeira accepted for publication in Green Chemistry

In November 2011, a research paper entitled "Energy-Efficient Extraction of Fuel and Chemical Feedstock's from Algae," by Dr. Rodrigo E. Teixeira, Research Assistant Professor of Chemical and Materials Engineering, was accepted for publication in *Green Chemistry*, a high-impact journal of the Royal Society of Chemistry. His paper was very well received by all reviewers and he was offered the front cover of the February 2012 issue, which is reserved to authors of the highest-quality articles. This paper highlights his work in algae extraction.

ChE students' place 8th in regional ChemE car competition at Clemson University

In April 2012, undergraduate students from the UAHuntsville chapter of the American Institute of Chemical Engineers participated in the regional ChemE Car competition held at Clemson University. The University of Alabama in Huntsville bases the design of the Watter-Bug on hydrogen fuel cell technology. An electrolyzer generates enough hydrogen prior to each run by breaking the bond between oxygen and hydrogen. The proton exchange membrane on the fuel cell allows for hydrogen gas to be channeled to a membrane where a platinum catalyst splits the hydrogen gas into positive ions which with oxygen in the air. The electrons generated by this splitting of hydrogen molecules are channeled into an electrical circuit. The circuit converts the 4-9.6 Volt output of the fuel cell into around 20 Volts in order to power a high efficiency DC-Micromotor. This voltage increase is accomplished by a LM2587 DC-DC converter boost step-up module. The motor on the Watter-Bug is a DC-Micromotor Series 3863-024C which has high efficiency ball bearings and low friction carbon brushes and has been machined to interface with the body of the Watter-Bug. The Watter-Bug will stop its motion once the hydrogen supplied to the fuel cell is exhausted.

They placed 8th in the field of 20 competitors, which was a significant accomplishment after only a few months preparation. Faculty mentors for the team were Dr. J. E. Smith, Professor of Chemical & Materials Engineering and Dr. J. J. Weimer, Associate Professor of Chemistry and of Chemical & Materials Engineering. .

BP Scholarship Program for Chemical Engineering Students at UAHuntsville

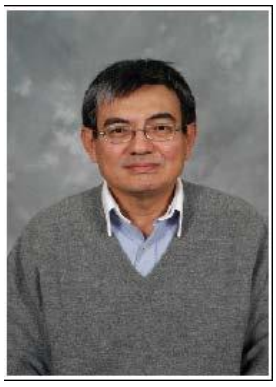
Bp America Inc. awarded a generous gift of $10,000 to the University of Alabama in Huntsville and the Department of Chemical and Materials Engineering. This gift will support five $2,000 scholarships in recognition of the top senior-level chemical engineering students at UAHuntsville. These one-year fellowships will be awarded in the fourth year of study and should be considered as recognition of demonstrated dedication and intellectual ability through chemical engineering studies.

The 2012 seniors awarded were William Avery, Cassandra Haynes, Aaron Howell, Eric Pritchett and Julie Thomas.

CME student selected to participate in the Science Undergraduate Laboratory Internships Program at Oak Ridge National Laboratory

Undergraduate Chemical and Materials Engineering student Julie Thomas has been selected to participate in the Science Undergraduate Laboratory Internships (SULI) program at the Oak Ridge National Laboratory (ORNL) in Oak Ridge, TN. This is a highly competitive program that allows students to do research with some of the best scientists in the world. The appointee will participate in a research project to assess novel catalytic materials for biofuel applications. Through hands-on laboratory work and data interpretation, the student will learn and apply methodologies to discover relationships between synthesis parameters, structures, and performance of catalytic materials. The ultimate goal of the study is to obtain fundamental insights relevant to the development of chemical catalysts tailored to biomass-derived liquids. The proposed activity will involve capabilities residing in the National Transportation Research Center (NTRC) and the Center for Nanophase Materials Sciences (CNMS).

Dr. Chien-Pin Chen named AIAA Associate Fellow



CME Professor and Chair Chien-Pin Chen has been selected as an AIAA Associate Fellow for 2012. The Associate Fellows were honored at the AIAA Associate Fellows Dinner on Monday, January 9, 2012 at the 50th AIAA Aerospace Sciences Meeting. To be selected for the Gaylord Opryland Resort & Convention Center, Nashville, Tenn., in conjunction with the 50th AIAA Aerospace Sciences Meeting. To be selected for the grade of Associate Fellow, an individual must be an AIAA Senior Member with at least twelve years professional experience and be recommended by a minimum of three current Associate Fellows. Each year, the Institute recognizes exemplary professionals for their accomplishments in engineering or scientific work, outstanding merit, and contributions to the arts, sciences, or technology of aeronautics or astronautics. The 2012 inductees were presented with an Associate Fellow certificate and a silver AIAA Associate Fellow lapel pin.

The 2012 Outstanding Chemical Engineering student

The Department of Chemical and Materials Engineering is proud to honor Mr. Eric. Pritchett as the 2012 Outstanding Undergraduate Chemical Engineering student and Mr. Javier Sanchez Santiago as the 2012 Outstanding Graduate Chemical Engineering Student.

Dr. James E. Smith, Jr. invited as visiting scholar to Shandong University in China

The Department of Chemical and Materials Engineering Professor, James E. Smith, Jr., has been invited as a Visiting Scholar to Shandong University in China.

Shandong University (SOU) was founded in 1901 in Shandong Province and is a comprehensive university with courses covering ten fields, namely: literature, history, philosophy, science, engineering, medicine, economics, law, management and education. Known for its academic excellence and diverse life on campus, SOU attracts top students from across China and from about 30 countries. Dr. Smith will teach *Process Control System* at Shandong University as part of their 2012 "Curriculum Internationalization Program" (Crp). *Process Control System* includes advanced solution topics, numerical analysis and user-graphic interface to analyze process control stability using engineering software tools.

CME Graduate Student Keerthi Venkataramanan's publication has been accepted in Applied Microbiology and Biotechnology.

CME Graduate Student Keerthi Venkataraman's publication, "Impact of the Impurities in Biodiesel-Derived Crude Glycerol on its Fermentation by Clostridium pasteurianum ATCC 6013", has been accepted for publication in the high impact journal of "Applied Microbiology and Biotechnology." Keerthi is currently advised by Dr. Carmen Scholz and was awarded an MSE degree in Chemical Engineering in August 2011. Keerthi is currently a Ph.D. student in Biotechnology Science and Engineering, an interdisciplinary program with faculty from the Departments of Chemical Engineering, Chemistry, and Biological Sciences. Keerthi's co-authors are: Boatman JJ, Scholz C, Taconi KA, Kurniawan Y, and Bothun GD.

Current Undergraduate Students News

Ms. Sabiha Runa, won the 3rd place in the Student Paper Competition of ASCE (American Society of Civil Engineers) World EWRI (Environmental & Water Resources Institute) Congress 2012 May 20th thru May 24th, 2012 in Albuquerque, New Mexico. The co-author of her paper is Dr. Kathleen Leonard from CEE.

This opportunity would be beneficial because it would allow Ms. Runa to present her research and thus allow her to represent UAH at a world conference. Additionally, attending this conference would allow her to meet with other undergraduate students and professionals not to increase her connections and CME/COE visibility.

Ms. Jocelyn Knighting has been accepted to the Research Experience for Undergraduate (REU) program in materials research at Carnegie Mellon University based on her excellent academic achievements, superb recommendation and enthusiasm for research. The REU program begins in May 28, 2012 and last until August 4, 2012. As a participant to the program, she will have the opportunity to select from a broad range of projects involving chemistry, physics and engineering of materials. Also, guest lecturers from industry and government laboratories will supplement academic seminars to expose students to industrial research and professional experiences.

Chemical Engineering proposes Curriculum changes

The Chemical and Materials Engineering Department propose to change the current curriculum in order to introduce more CHE material into the freshman year so the students have a better connection between basic science course material and CHE fundamentals.

One of the additions proposed is to introduce a Safety and Toxicology course that will be very beneficial for the students.

Alumni News

GREG BENNET

Greg is an Assistant Professor of Chemical Engineering Technology in the Engineering Technology department at Chattanooga State Community College. He teaches 2nd year ChemE Tech students about Process Operations, Process Chemistry, and Process Troubleshooting. These courses focus on the practical application of chemistry and engineering equations (Mass, Heat, and mechanical energy balances along with basic vapor/liquid equilibrium) associated with industrial chemical production. There is also a strong focus on developing a working understanding of various unit operations and personal/equipment/environmental safety. These teaching objectives are accomplished by lectures leading into significant hands-on laboratory work. The ChemE Tech department is partnered with Wacker Polysilicon - North America, which is building a near 2 billion dollar plant just outside of Chattanooga. Chattanooga State's role in this partnership is to effectively train and teach chemical operators and maintenance technicians to work in Wacker's Polysilicon plant when it opens in early 2013. The prize of this partnership is the pilot scale distillation system in the Wacker Institute on the main campus of Chattanooga State, where their students, using actual industrial automated controls systems, operate two separate distillation columns (sieve and bubble cap) for the purification of ethyl alcohol in water. Furthermore, the system is unique in that all major piping and equipment are glass, allowing for a rare view of the process fluids as they move through a unit operation. It's a really remarkable system.

Thai Huynh (Graduated with B.S. May 2012)

Thai got in University of South Alabama with scholarship and she will start her grad school down in mobile in the fall.

Eric Pritchett (Graduated with B.S. May 2012)

Eric has taken a position working in town for SAIC doing software engineering and data analysis. He is contracted to work for the Missile Defense Agency. He also got married in June.