Fall 2008, Vol. 6 No.



DRAGOVES

Look Inside...

Paul Baran Receives Award from White House

Christopher Ferguson Commands Space Shuttle Mission

ASME Chapter Races in Soap Box Derby





A Message from the Dean

The hard work and dedication of our students, faculty and staff has supported Drexel's remarkable achievement in the rankings. We are thrilled that *U.S.News & World Report* placed Drexel 89th out of 260 universities in the "Best National Universities" and acknowledged the striking innovation of the university. The rankings demonstrate the success not only of the

University, but also of CoE. CoE has

developed academic leadership
through novel programs and excels
in cutting-edge research. We
practice a commitment to
excellence, reflected in all
the exciting happenings at
the college. Enjoy
reading this issue of

DBAGONotes!

— Dean Selçuk Güçeri

Drexel Ranks as One of Nation's Most Innovative Schools

Drexel University placed 89th out of 260 universities in the 2009 *U.S.News & World Report* rankings for Best National Universities. The 19-position jump from last year's 108th place ranking has put Drexel among the top 50 private universities in the country.

Drexel also ranked sixth out of 20 schools selected as the top "up-and-coming schools." *U.S.News & World Report* states "These colleges may not be at the top of their rankings (yet), but they're tops for innovation." Drexel University made the short list of national universities that have achieved "the most promising and innovative changes in academics, faculty, students, campus, or facilities," according to top college officials polled by *U.S.News & World Report* for the 2009 edition of "America's Best Colleges."

"Our placement in the *U.S.News & World Report* rankings illustrate how Drexel is reaching unprecedented heights every day. Our students, faculty and staff have set the bar for standards of excellence and with their continued commitment, we'll succeed with our climb to the top," says Dr. Selçuk Güçeri, Dean of Drexel University's College of Engineering.

The *U.S. News* rankings group schools based on categories created by the Carnegie Foundation for the Advancement of Teaching. The rankings were published in the magazine's September issue and they are available online at **www.USNews.com/colleges**.



Drexel University has been named one of "the most promising and innovative" national universities.

DRAGONotes

CoE Welcomes New Engineering Faculty

To kick off the new academic year, CoE is excited to welcome four new faculty members to our team.

Rachel Greenstadt is welcomed into the CS department as an Assistant Professor. She received her PhD from Harvard University and her MS and BS degrees from MIT. Dr. Greenstadt has interests in both the technical and societal aspects of computing with expertise in artificial intelligence, electronic privacy and computer and network security.

"Tm excited to expand my work at Drexel's College of Engineering Drexel's growth over the last decade marks it as a dynamic institution and I feel I can make an impact in this up-and-coming school. I look forward to interdisciplinary research with the

students through the co-op program."

M. Ani Hsieh is joining the MEM department. She received her PhD and her MS from the University of Pennsylvania. In addition, Dr. Hsieh received her BS in engineering and her BA in economics from Swarthmore College. Dr. Hsieh's research interests are in networked robotic systems and control and coordination of robotic swarms.

"The field of robotics is poised to play a significant role in the everyday lives of average people. Advances in numerous technological fields are pushing robotics forward at an exhilarating pace. I am excited to join the College of Engineering and look forward to sharing my interest in robotics with the students."

Sabrina Spatari is the newest addition to the CAEE department. Dr. Spatari received her PhD from the University of Toronto and her MS from the University of Michigan. Her research concentrates on the development and application of systems-analysis methods for guiding decision making. Currently, she is applying these methods to the study of biofuel production technology. Her research interests include renewable energy provision systems, particularly in transportation.

"Preparing future engineers to meet the challenges of designing sustainable infrastructure will demand an increasingly more interdisciplinary knowledge base; one that extends beyond the fundamental technical principles into understanding economics, financing, public policy, decision-making and governance. I look forward to building a learning environment for civil engineering students at Drexel."

Mitra Taheri is the Hoeganaes Assistant Professor in the MSE department. Dr. Taheri received her PhD from Carnegie Mellon University. Her work involves the study of structure-property relationships (mechanical and electrical) and microstructural evolution of materials using in situ TEM. She joins us from Lawrence Livermore National Laboratory, where her research group worked to develop the Dynamic TEM-an ultrafast in situ TEM technique. She will continue similar research at Drexel.



"Tm excited to be in the MSE Department at Drexel. I have the opportunity to show students the unique and interesting tools we use as materials scientists and how the knowledge we gain from these tools can help make better materials for a better world."



David Staack to Become Faculty Member at Texas A & M

David Staack '08 (MEM) has accepted a tenure-track faculty position at Texas A&M in the Mechanical Engineering Department starting January 2009. At Texas A&M, David plans to establish his own laboratory focusing on plasma engineering and applications.

"I am very excited about starting at Texas A&M. Directing my own research is something I am eager to do and I have been preparing for a long time" David says of his new position.

David joined Drexel upon completing his undergraduate studies at the University of Virginia and his master's at Princeton University. While at Drexel, David pursued research into novel micro- and nano- scale plasma discharges for applications in materials fabrication and biomedicine under the supervision of advisors Drs. Baki Farouk (MEM) and Alexander Fridman (MEM).

David says, "I had the opportunity to work on complex, innovative problems with knowledgeable and interesting people. Plasma engineering applications are not simply at the cutting edge but they are internationally recognized as defining new directions for plasma research in the fields of medicine, nanotechnology and energy."

While at Drexel, David has been a recipient of the NSF IGERT fellowship in nanotechnology and the Koerner Family Fellowship. David is the second of CoE's PhD students to join Texas A&M faculty from Drexel.

DREXEL ENGINEE

ASME Chapter Races in Philadelphia's Red Bull Soap Box Derby

Drexel's chapter of American Society of Mechanical Engineers (ASME) competed with more than 40 teams to win a place in soap box history at Philadelphia's Red Bull Soap Box Derby. Raymond Brown '11 (MEM), Jonathan Mahler '09 (MEM), Chris Muenker '11 (MEM) and Pat Sweeney '11 (MEM) raced a Dragon-shaped vehicle designed by ASME members.

Despite the torrential downpours, Drexel's Dragon Force still raced down Manayunk's 1,785 foot course on Lyceum Avenue to place 15th in the competition. The Dragon Force reached a speed of 20.0 mph and a final time of 55.13 seconds.

Muenker, a member of ASME team said, "The Red Bull Soapbox race is not like any competition that we have been faced with. It combines design and fun with welding and mechanics. We had the opportunity to not just compete on a design level but on a creative level as well."

The ASME chapter qualified late for the competition with three weeks notice. With the challenge of time restraints, the team used one week for design, one week for building and one week for decorating. The teams were judged on creativity, speed and showmanship. Drexels' ASME planned a skit around the Dragon Force song from Guitar Hero®. Their inspiration to build a dragon stemmed from Drexel's mascot, Mario the Dragon. For more information on the race, please visit www.drexel.edu/coe/news.

Dr. Selçuk Güçeri, Dean of Drexel University's CoE (center), met with the Dragon Force team before the competition to scope out the final design.



Founding Father of the Internet:

Dr.Paul Baran Receives
Award from White House

Dr. Paul Baran, a founding father of the Internet and a Drexel University alumnus, has been named a 2007 National Medal of Technology and Innovation laureate. President Bush

presented the award to Dr. Baran in the East Room of the White House. The award honors America's leading innovators and is presented to individuals, teams and companies for their contributions to the nation's economic, environmental and social well-being.

Dr. Paul Baran '49 (ECE) was honored at

the White House for his development of packet switching technology that made the Internet possible.

Dr. Selçuk Güçeri, Dean of Drexel University's College of Engineering, attended the White House Awards ceremony with Dr. Baran. Dr. Güçeri said, "The College of Engineering takes great pride in Paul's work and we congratulate him on his continued success. As the founding father of the internet, Paul is deserving of this award and his innovations have changed the world forever."

A native of Poland who graduated from Drexel with a bachelor of science in electrical engineering in 1949 and received an honorary degree in 1997, Dr. Baran is credited with helping to develop packet-switching technology in 1962. Packet-switching enables information to be divided into small packets that are addressed, sent to several destinations to increase the odds the information will actually arrive and, finally, reassembled. Packet-switching laid the foundation for the Internet to develop. For more information on Dr. Baran, please visit **www.drexel.edu/coe/news**.

A World of Opportunity: Study Abroad and International Exchange Program

Through our study abroad and international exchange program, students are provided with a cultural and social experience to prepare them to be effective contributors and leaders in the workplace and society. To enhance the global education at Drexel, CoE is looking forward to continuing its innovative joint cooperative agreement with Shanghai Jiao Tong University and Air Products. The integrated "3+2 Program" enables two exceptional Chinese students per year the opportunity to earn undergraduate and graduate degrees and a corporate work assignment while engaging in a global curriculum. For more information on our study abroad programs, please visit http://drexel.studioabroad.com/.



This year's participating students of the "ogram" Yanzhi Jiang '10 (CBE) Yanwei Sun '10 (MEM) enjoy Philadelphia's LOVE Park.

RING

A Newsletter for Students, Parents and Friends of Drexel University's College of Engineering

Students Travel to East Africa to Introduce Woodturning Lathe Technology

Drexel engineers journeyed to East Africa to introduce the citizens of Karatu, Tanzania, to the woodturning lathe: a sustainable machine design that will turn local resources into simple tools and increase the economic development of Tanzania.

Mechanical engineering students David Droz '08, Alex Moseson '10 and Josh Raizman '08 traveled with Dr. Lew Lama, an anthropologist and carpenter, to educate local craftsmen and more than 100 children at three

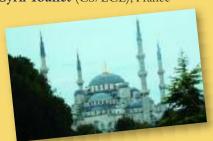
different vocational centers in Tanzania on how to build the wood-turning lathe: a simple machine that is created from scrap material and used to cut and shape wood. The wood-turning lathes provided the citizens with a manufacturing technology that will enable them to sell goods from renewable energy sources and local materials. In addition, the senior design team distributed an instruction manual that they created which will assist local citizens with building the lathes.

Alex explained that the team plans to continue the advocacy with the support of the college. The team's mission is to create engineering solutions to meet the needs of people in other developing countries. Alex said, "We came back with a good problem. Technology seeding is key and we plan to provide a vision so they can execute it with our help."

The students planned the trip with the assistance of professor Dr. James Tangorra (MEM) and established a design process with mechanical engineering students Alpha Bah '08 and Shreynash Shah '08. For more information on the project, please visit the team's website at www.lathesforafrica.org/.

Please extend a warm welcome to new international students...

Florence Bannier (MEM), France Angelo Carobbio (MEM,) Germany Hamish Davison (CAEE), UK Christian Kowalski, Germany Samet Oymak (ECE), Turkey Eloi Ragot (MSE), France Barthelemy Sire (CS), France Mark Shuttleworth (CAEE), UK Laure Thibaudeau (MSE), France Cyril Touffet (CS/ECE), France





...and wish the best of luck to those who are currently studying abroad

Scott Anderson (CS), Sweden
Benjamin Greene (CAEE), England
Daniel Jacobsen, (CAEE), England
Marie La Posta (MEM), Hungary
Lauren Palmer (CBE), Turkey
Bobby Roberson (ECE), Taiwan
Mark Tocco (MEM), Japan
Michael Wexler (CAEE), England

1 Josh Raizman '08 (MEM) guides the citizens of Tanzania on how to use a woodturning lathe.

2 David Droz '08 (MEM) stops to meet one of the children in the village where his team worked during their trip.

Upcoming Events

Engineers Week

February 16-20, 2009

Join CoE in recognizing the contributions of our engineers during our week-long celebration. Please visit **www.drexel.edu/coe** for a detailed list of events.

Open Houses

January 12, 2009
Experience Drexel Day
Main Building

January 23, 2009
Accepted Students Day
A.J. Drexel Picture Gallery

January 30, 2009

Department Visit Day

A.J. Drexel Picture Gallery

For more information about upcoming CoE events, please visit www.drexel.edu/coe/events.asp.



Christopher Ferguson '84 (MEM) will command space mission Endeavour STS-126.

Astronaut Christopher Ferguson Commands Space Shuttle Mission

Drexel alumnus Christopher Ferguson '84 (MEM) is the commander for NASA space mission Endeavour STS-126,which launched November 14. The flight is delivering equipment to the International Space Station to enable larger crews to reside aboard the complex. Endeavour will carry a reusable logistics module that will hold supplies and equipment, including additional crew quarters, a second treadmill, equipment for the regenerative life support system and spare hardware.

"We are proud of Chris in leading this mission for NASA. Chris is showing tremendous leadership as Commander of the STS-126 mission and he continues to be a role model for our students as well as an accomplished alumnus" says Dr. Selçuk Güçeri, Dean of Drexel University's College of Engineering.

Mr. Ferguson is a native of Philadelphia and he has served as pilot of the shuttle Atlantis for STS-115. STS-126 will be the 27th shuttle mission to the International Space Station and the mission is expected to last for 15 days. Mr. Ferguson is one of three alumni astronauts from CoE, in addition to Dr. James Bagian '73 (MEM) and Paul Richards '87 (MEM).

Video of the STS-126 crew members will air on NASA television's video file. For scheduling information and links to streaming video, please visit www.nasa.gov/ntv.



Faculty Profile: Dr. Chika Nwankpa



With increasing global concern of inefficient and insecure energy networks, ECE professor Chika
Nwankpa has been developing a unique approach to creating a resilient and sustainable interconnected energy network for the future. Dr.
Nwankpa and his team are

researching methods to improve the energy network with analog computation.

Dr. Nwankpa's research is in large scale networks, specifically electric energy grids spanning millions of square miles. In his efforts to improve the energy network, Dr. Nwankpa and his team are working to combine previously analyzed single-faceted networks to form single multi-faceted networks that will increase efficiency and security of energy delivery systems. In his exploration of analog computational theory, Dr. Nwankpa plans to develop an analog computer for the purpose of power system security assessment. A possible solution to energy grid sustainability is to develop generation-based renewable energy sources into the existing energy grid.

Dr. Nwankpa says, "It is often stated that the vast energy infrastructure is arguably one of the most complicated and interesting human artifacts ever built. The increasing demand for energy and the simultaneous consumption of fossil fuel-based resources is reaching a point of irreversibility, which will inevitably lead to effects on human quality of life."

Although the present focus is on power system security assessment, the analog computer is robust. The analog computer can be easily utilized for other power system analyses. Dr. Nwankpa and his team have developed analog computers with simulation times for a small scale system which is 10,000 times shorter than the real time simulated phenomena. In order to use the analog method as a possible tool in the energy system analysis, accurate models of power system components and pertinent analog computational theory are essential. In addition, analog computations are achievable solutions, faster, and a more efficient type of computation rather than traditional digital methods.

Dr. Nwankpa's research could potentially lead to quick analytical solutions to siting controlling, and maintaining new energy sources. Dr. Nwankpa received his PhD from Illinois Institute of Technology (IIT).



Dragonotes College of Engineering **Drexel University** 3141 Chestnut Street

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Did You Know?

Engineering students typically do the five year curriculum at Drexel University that includes three co-ops. The co-ops leave students with a year and a half of work experience on their résumé.





Why did you choose Drexel University?

TB: When I began my college search, I applied to several schools that were known for being excellent engineering schools. Drexel was at the top of the list. The co-op program and Drexel's location in Philadelphia separated Drexel from other schools. Being able to co-op with well known companies in Philadelphia is the major reason I chose Drexel.

Why did you choose your current major?

TB: I didn't start off as an architectural engineer when I got to Drexel. I had interests in mechanical engineering as well as civil, so when I first arrived I was listed as a mechanical engineer for my freshman year. Everyone takes the same classes freshman year so I still had time to think about my major. My first co-op was mechanical engineering related but after the co-op, I realized I wanted to have some experience in civil engineering. I was able to come to a decent compromise by enrolling in the Architectural Engineering program with a mechanical concentration.

What role have your co-op experiences played during your time at Drexel?

TB: My co-op experiences have been one of the most important aspects of my time spent at Drexel. As I went through each job, I was able to earn the respect of my co-workers. By the end of each co-op, I really felt like I was a part of the company. Working for large companies like Arkema, DMJM Harris and the Children's Hospital of Philadelphia exposed me to a wide variety of projects and experiences that the classroom could never provide.

What are your future plans?

TB: As of now, I plan on graduating and entering the full-time work force. My senior year has just begun and through the programs available with the Steinbright Career Development Center, I have already started looking at what full-time job opportunities exist. I plan on taking the Fundamentals of Engineering exam and hopefully earn my PE in a few years.

Study Abroad Programs

It's never too early to start thinking about study abroad opportunities! For more information, check out the study abroad website: https://drexel.studioabroad.com/

Or contact Vanessa Vardon, 215-895-6601, vardon@drexel.edu.

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