Æ Illinois

Newsletter of the Department of Aerospace Engineering
University of Illinois at Urbana-Champaign

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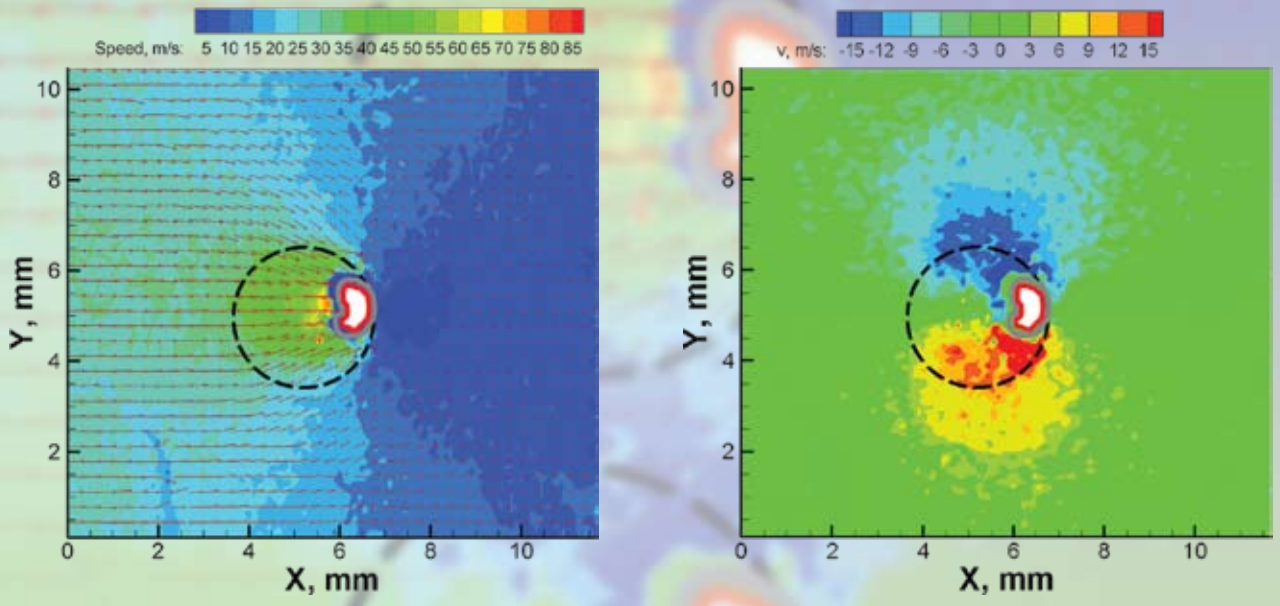

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Thanks to Our Donors

On the cover: (left) **Experimental measurements of the velocity field around a collapsing void after dynamic loading.** ***(right)*** **The measured region of influence due to a single void collapse. Courtesy of Prof. Joanna M. Austin.**

Letter from the Department Head

Alumni, friends, and colleagues: Welcome to the 2010 Newsletter of the Illinois Aerospace Engineering Department. Despite a trying budget climate in the state of Illinois, our department continues to thrive. Our enrollments remain strong with 376 undergraduate and 150 graduate students this fall. We have emphasized the growth of our graduate program in particular in the last several years; its enrollment now stands at an all-time high. Our students are also extraordinarily strong with very high entering GPAs, GRE and ACT test scores, and class ranks. It is a blessing for us on the AE faculty and staff to work with such talented individuals.

The implementation of our recently revised undergraduate curriculum is going extremely smoothly. Both students and faculty alike are very pleased with the improved content and structure of this revision. Similarly, the implementation of our revised M.S. program, including a new non-thesis option, has gone quite well to date. A major portion of the increased enrollment in the graduate program is attributable to the M.S. non-thesis option. Next up will be revisions to our Ph.D. program. While our current Ph.D. program is strong, we have desires to make it even stronger as an international role model for doctoral education in the aeronautical sciences and engineering.

Our research programs are thriving as well. In FY2010 we had the highest level of research expenditures ever

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While our current Ph.D. program is strong, we have desires to make it even stronger as an international role model for doctoral education in the aeronautical sciences and engineering.

within the department, and the initiation of some very exciting new programs. Several of these programs are featured in the following pages, including the work of Profs. Joanna Austin, Tim Bretl, Cedric Langbort, Soon-Jo Chung, Jonathan Freund, Ioannis Chasiotis, Scott White, Bruce Conway, and Philippe Geubelle.

We are also extremely proud of the accomplishments of our amazing students. Many of these achievements are documented in the following pages, including Department and University awards and scholarships, and national awards and scholarships such as the AIAA Team Space Design Competition and the AIAA National Scholarship.

We also continue to reach out to you, our alumni and friends. Our alumni relations coordinator/advancement officer, Brett Clifton, has done an outstanding job of coordinating our annual Alumni Board meeting in October and hosting an alumni reception in January at the AIAA Aerospace Sciences Meeting in Orlando. In addition, we had outstanding AE turnouts at the College of Engineering alumni events in Houston in February, Seattle in July, and St. Louis in November. Wherever we go, we enjoy hearing about the excellence of the education you received and your wonderful experiences at Illinois and in AE. With your gifts you can "give back" by providing our programs with the margin of excellence that state educational, tuition, and federal research funds cannot cover. Thus, you continue to play a pivotal role in our success.

So, read and enjoy. We look forward to hearing from you; our contact information is readily available on our website at: http://www.ae.illinois.edu/.

Sincerely,

Craig Dutton
Bliss Professor and Head

Department of Aerospace Engineering

Tenured/Tenure Track Faculty

Joanna M. Austin
Lawrence A. Bergman
Daniel J. Bodony
Michael B. Bragg
Timothy W. Bretl
Ioannis Chasiotis
Soon-Jo Chung
Bruce A. Conway
Victoria L. Coverstone
J. Craig Dutton
Gregory S. Elliott
Jonathan B. Freund
Philippe H. Geubelle
John Lambros
Cedric Langbort
Ki D. Lee
Eric Loth
N. Sri Namachchivaya
Michael S. Selig
Petros G. Voulgaris
Scott R. White

Emeritus Faculty

John D. Buckmaster
Rodney L. Burton
Harry H. Hilton
Allen Ormsbee
John E. Prussing
Kenneth R. Sivier
Wayne C. Solomon
Shee Mang Yen

Affiliate/Adjunct Faculty

Kenneth T. Christensen
Naira Hovakimyan
Thomas L. Jackson
Arif Masud
George H. Miley
James W. Phillips
Srinivasa M. Salapaka
Nancy R. Sottos
Alexander Vakakis

AE Faculty Listed as Excellent

AE faculty recently included on the List of Teachers Rated as Excellent by Their Students have been: Spring 2010, Assistant Prof. Daniel J. Bodony, Assistant Prof. Timothy W. Bretl, Prof. Bruce A. Conway, Prof. Victoria L. Coverstone, Prof. Jonathan B. Freund, Prof. Philippe H. Geubelle, Emeritus Prof. Harry H. Hilton, Prof. John Lambros, Emeritus Prof. John E. Prussing; Fall 2009, Prof. Lawrence A. Bergman, Conway.

Austin Earns NSF CAREER Award and Shares in Best Paper Award

Austin

AE Assistant Prof. Joanna M. Austin has earned a 2010 Faculty Early Career Development (CAREER) Award for research to help minimize tissue and cell damage during procedures such as shock-wave lithotripsy, used in breaking up kidney stones.

Austin and her co-authors also were selected by the Fluid Dynamics Technical Committee of the American Institute of Aeronautics and Astronautics (AIAA) for the 2009 Best Paper Award.

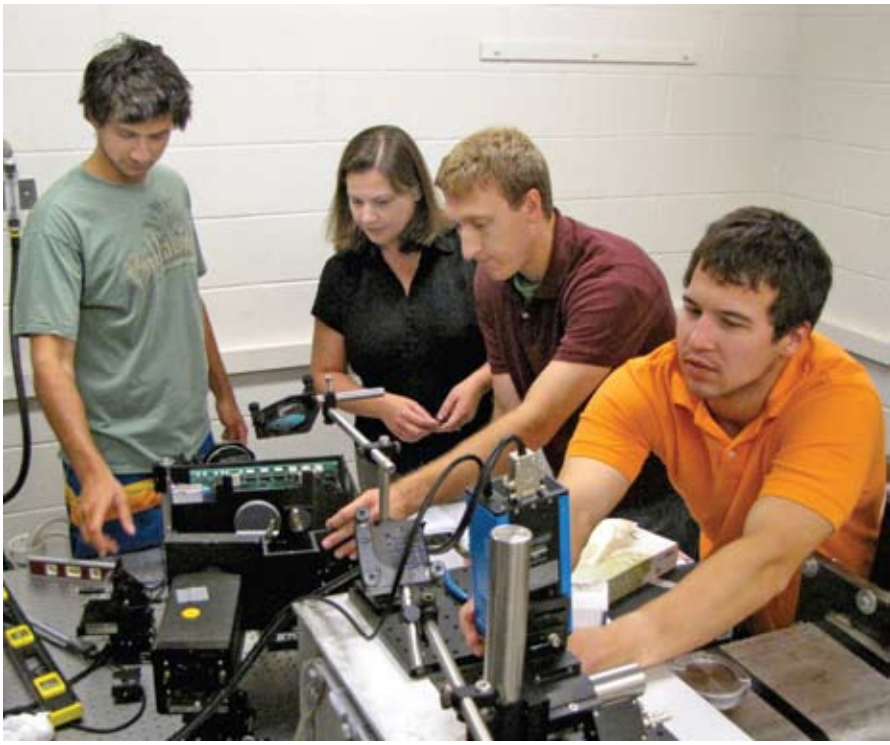
The $400,000 National Science Foundation CAREER award will support Austin and her group's study of shock- and stress wave-induced void collapse in biomedical applications. Tissue can be damaged during such applications if cavities develop and then collapse in the tissue. Austin's work to predict such damage could impact treatment decisions in procedures such as lithotripsy, laser-induced plasma surgery, and ultrasound. Model experiments include high-speed imaging and the first velocity field measurements around collapsing voids.

The Best Paper Award was presented at the 39th AIAA Fluid Dynamics Conference held in June 2009. Simon Sanderson of General Electric was lead author. Co-authors were Austin, Zhe Liang of AECL Chalk River Laboratories; Florian Pintgen of General Electric Global Research; and Joseph Shepherd and Hans G. Hornung, professor and emeritus professor, respectively, of aeronautics at the Graduate Aerospace Laboratories, California Institute of Technology.

The paper, entitled "Reactant Jetting in Unstable Detonation," was produced in honor of Hornung's 75th birthday. The work demonstrated the structural equivalence of the supersonic jet occurring in a hypervelocity shock impingement and reaction zone features in gaseous detonation, Austin said. The mechanism for jetting of bulk pockets of unreacted fluid observed in highly unstable detonations was explained.

Austin's research areas are fluid mechanics, compressible flow and combustion. She directs the Compressible Fluid Mechanics Laboratory.

Austin began her career at Illinois after earning a PhD and master's degree in aeronautical engineering at the California Institute of Technology in 2003 and 1997, respectively. She had earned bachelor's degrees in mathematics and in mechanical and space engineering in 1996 from the University of Queensland in Australia.



Bretl Uses 'Mind-reading' to Improve Prosthetic Device Design, Fly Remote-controlled Planes

MODIFIED FROM ORIGINAL STORIES BY MEGAN KELLY, COORDINATED SCIENCE LABORATORY

AE Assistant Prof. Timothy W. Bretl's research using electroencephalography (EEG) connections to brain-machine interfaces (BMIs) has enabled mind control of machine movement.

So far, this technology has been applied to fly remote-controlled planes and to improve the design of prosthetic devices, the latter of which has earned Bretl a 2010 Faculty Early Career Development (CAREER) Award from the National Science Foundation.

Prosthetic Device Design

"The game today is to make a functional prosthetic limb with as few motor degrees of freedom as possible, with the theory that it'll be easier to control," said Bretl, who also works as a researcher in the Coordinated Science Laboratory (CSL). "There's evidence from both neuroscience and robotics that this implicit assumption is not true, and that we should think much more carefully about the interface between the person and the device."

Bretl's unique interdisciplinary background in aerospace engineering, robotics and neuroscience – areas that traditionally do not go together – makes him well equipped to handle some of today's greatest challenges in prosthetic device design. His interdisciplinary tendencies also helped result in the CAREER Award, which carries a $400,000 monetary value and spans five years.

Bretl and his team of graduate students will begin by using the money to accelerate research on brain-machine interfaces (BMIs). These interfaces enable people to control prosthetic devices through direct measurement of brain activity.

For example, in collaboration with colleagues Todd Coleman in CSL and Ed Maclin in the Beckman Institute, Bretl's team uses EEG to predict motor intent. EEG is a noninvasive measurement of brain activity recorded by an electrode cap worn on a person's scalp. A BMI is a direct communication pathway between a person and a computer. In this case, the EEG is connected to a computer, and Bretl's team analyzes the voltage between electrodes. If an individual imagines moving his left arm, brain activity will stimulate specific electrodes that the computer reads. This technique may produce novel prosthetic devices that improve quality of life for people with disabilities due to amputation, spinal cord injury and stroke.

"Successful use of BMIs will allow individuals with impaired sensory-motor function to control a prosthetic limb by thought alone," Bretl said.

To improve the BMIs' performance, Bretl aims to derive new models of human motor control and learning. These models are based on the observation that motor control resembles a process of communication between the brain and the rest of the body and that motor commands are like words in a language. The key is to understand this language and how it can be used to describe human motion.

Bretl's students are also involved in other projects related to his work on BMIs. For example, a recent focus has involved robotic manipulation of deformable objects, such as a piece of paper without a fixed shape. Bretl believes that finding a simple way to describe this shape is similar to finding a simple way to describe human motion.

"It's a challenge but we've developed a principled approach to come up with the right set of parameters to describe these infinite-dimensional objects," said

Bretl

Bretl Students' Robotics Work Featured on Popular Science Site

A robotics project of Aaron T. Becker and Robert Sandheinrich, graduate students working with AE Assistant Prof. Timothy Bretl, has been featured on the Popular Science website, http://www.popsci.com/technology/article/2009-12/ball-levitating-bot-also-preps-your-produce.

The story and a YouTube video show how the students constructed an air-jet system to make ping pong balls float through obstacle courses and, with precision accuracy, move across a room to land in a vessel of water. The video also shows the system levitating an apple and a water bottle, and "peeling" an onion.

Bretl cautioned that the work is preliminary, and "has turned out to be very, very challenging." He added, "They did a great job on the video, and presented the work at a robotics conference (in fall 2009)."

Becker's home Department is Electrical and Computer Engineering. Sandheinrich recently earned his master's degree from Mechanical Science & Engineering.

Bretl. "It's gratifying to see links between different parts of our work become more concrete. It makes future development that much easier."

The CAREER Award includes an educational component. BMIs will be demonstrated at Engineering Open House and at the Neuroscience Program's "Brain Day" to educate the elementary school level. With Diane Jeffers of AE, Bretl also co-directs the Illinois Aerospace Institute, a week-long program introducing high-school students to topics in aerospace engineering, including space robot teleoperation, which is directly relevant to Bretl's research.

"We get an amazing reaction from students who participate," Bretl said. "One of my students last year said the program changed her career direction, prompting her to go into neuroscience and pre-med. These students see the potential applications for this in 10 or 20 years, which is exactly what I'm going for."

At the collegiate level, undergraduate classes will be offered, with a focus on attracting students from diverse backgrounds. At the graduate level, Bretl plans to teach a neuroscience course within the Illinois IGERT (Integrative Graduate Education and Research Traineeship) program.

"I hope this is the start of something that will carry through my entire career," Bretl said. "There are so many interesting questions to be answered."

Remote-controlled Movement

Bretl and his group have expanded the basic premises of the research to other levels.

"I wanted to push the state of the art," he said. "I wanted to connect EEG to a vehicle with complex dynamics. Not necessarily because I'm interested in a brain-controlled aircraft, but because it's way beyond the current state of the art. It's a good test to see how far we could go."

Because controlling aircraft is far more advanced than present EEG/BMI applications, Bretl said he has encountered challenges.

"What makes this problem hard is that EEG is such a noisy reflection of what the pilot wants. I'm collaborating with Todd (Coleman) and using tools from control and feedback information theory to say precisely how the aircraft should fly in order to best match the pilot's intent," Bretl said. "We have a nice framework and we know how to apply it, but we still have a lot of questions."

Further, Bretl wants to convey to the aircraft not just what direction he wants it to move at a specific moment, but the entire path of its trip.

"When a subject thinks 'go right', he's not saying 'turn to the right, right now', but 'somewhere along the line, I want to deviate to the right'," Bretl said. "How to actually communicate this clearly is something we're still working on."

Bretl said that while this technology may never be used for flight in the real world – "Is this a practical way to fly a single aircraft? Probably not!" – he's using the complex dynamics of aircraft as a foundation for advanced applications in other areas, such as helping the disabled gain mobility.

"We want them to drive cars, draw pictures, do the things that you and I take for granted," he said. "These things are challenging, in the same way that the aircraft is a bigger challenge."

Abdullah Akce, a graduate student in computer science and a member of Bretl's team, said experiments so far have been fairly successful. However, its success depends largely on the subject.

"Some subjects are able to make the aircraft follow a predetermined route with close accuracy," Akce said. "But other subjects have a more difficult time tracing the route."

If Bretl's research continues to be successful, he predicts that BMIs based on EEG may, in some cases, prove better than traditional interfaces like a keyboard or a joystick.

"We're in the process now of doing systematic trials with human subjects. It's a long road, and we're in the middle of it," he said. "Things are very much revving up now. I'm happy with our progress."

Illinois Researchers Receive Grant to Study Human-Machine Interactions

BY MEGAN KELLY, COORDINATED SCIENCE LAB

AE Assistant Prof. Cedric Langbort and collaborators in the Coordinated Science Lab (CSL) have received a $7.5 million Department of Defense Multidisciplinary University Research Initiative (MURI) award to better understand how humans and machines can make decisions and develop more reliable and secure multi-layer networks where team interactions take place.

The project studies communication and information acquisition and exchange between agents of different types in an adversarial environment, such as the battlefield. It is expected to have a dramatic impact on the most critical issues of inference: decision making and overall situational awareness.

"Our national security and economic health depend on our ability to provide robust, timely, and accurate responses to challenges that arise in complex networked environments where humans and machines with varying capabilities and intents interact," said Tamer Basar, the project principal investigator. Basar is a professor of Electrical and Computer Engineering (ECE) and the holder of a Swanlund Chair at the University.

In addition to Langbort and Basar, CSL researchers Geir Dullerud and Negar Kiyavash, and ECE Prof. Rayadurgam Srikant, along with six faculty from Georgia Tech, Stanford, UC-Berkeley, and the University of Maryland are also participating. The faculty come from a variety of backgrounds, including engineering (electrical, computer, industrial, mechanical, and aerospace), computer science, and economics. The Air Force Office of Scientific Research will fund this project for five years.

Langbort says multiple agents in different locations make decisions in a modern battlefield. These agents can be humans or machines and they share information through networks, introducing new vulnerabilities and new ways for adversaries to be strategic.

"Your actions influence what is and isn't observable to the other player or players. For example, in a situation on a battlefield, you either really fight the game in itself, or you can start attacking information itself, breaking into the network and starting rumors," Langbort said. "(Players) can just fight at the network level by either physically breaking into it or, in a more covert but still dangerous way, strategically modifying the information it carries."

The network attacks could be multifarious, including cognitive jamming, data tampering, malicious gossiping, disruption of physical links and servers, and hacking. They can also be stealthy, like a timing attack.

"The goal of this project is to understand how these strategic disruptions impact decision making and to architect the network, information flow, and decision algorithms themselves so that vulnerability to adversarial acts is minimized," said Basar. "For that, it is important to model the assumptions that agents make about each other and the adversary, and humans and machines build such assumptions very differently."

The team is using the framework of game theory, which is concerned with adversaries whose goals are nonaligned and who are competing with each other.

Dullerud, a professor of mechanical engineering, added that the team will examine the many levels of game theory, asking questions such as: What are the exact ways in which large numbers of both people and machines interact? What information do they share and how accurate is it? Are they telling the truth?

"The problem with this sort of interaction network is that there are too many entities, and it is not possible to model them all exactly. An interesting aspect is that if you look more closely at what appears to be a single modeling entity, it may well be a simplification of a game that is being played out on a smaller spatial or temporal scale, so one really has a game of games," Dullerud said.

To gain a better understanding of computer and human interaction, Dullerud is developing a distributed robotics test bed using a network of hovercraft and other autonomous vehicles that can interact with both human and machine-based decision makers. "We'd like to have a cyberphysical network comprised of humans and machines to help us experimentally determine what we need to know in order to systematically predict the behavior of a potentially large-scale human-machine network."

Dullerud believes the CSL's multidisciplinary history will contribute to the success of the project. "Also, educationwise, this is a very innovative project that will open up many opportunities for both graduate and undergraduate research training," he said.

Langbort

AIAA Conference Chooses Chung's Work for Best Paper Award

Chung

Research work by AE Assistant Prof. Soon-Jo Chung and his students was selected as the Best Paper presented during the American Institute of Aeronautics and Astronautics 2009 Infotech@Aerospace (I@A) Conference.

The paper, "Neurobiologically Inspired Control of Engineered Flapping Flight," was published in the March-April 2010 issue of *AIAA Journal of Guidance, Control, and Dynamics.*

Along with Chung, the paper's authors are Jeremiah Stoner, a master's degree student who worked with Chung when he was at Iowa State University, and Michael Dorothy, who earned a bachelor's degree at Iowa State and is now a PhD student of Chung's at Illinois.

The award was presented during the award luncheon held in Atlanta, Georgia in April.

Chung came to Illinois in 2009 after having been on faculty at Iowa State for two years. His research interests include aerospace systems, autonomous systems, and robotics. In particular, he studies nonlinear control theory; cooperative control and synchronization of multi-vehicle systems; neurobiologically inspired control of flapping flight and robot locomotion; robust nonlinear control of robots and high performance aerospace vehicles; formation flying of UAVs/MAVs and spacecraft; innovative concepts for space systems; space tethers; control experimentation and instrumentation; vision-based SLAM and path planning in GPS-denied environments.

The paper chosen at the I@A Conference presents a new control approach and a dynamic model for engineered flapping flight with many interacting degrees of freedom. Applications of neurobiologically inspired control systems are explored in the form of Central Pattern Generators (CPGs) to control flapping flight dynamics. A rigorous mathematical and control theoretic framework to design complex three-dimensional wing motions is presented based on phase synchronization of nonlinear oscillators.

In addition to Chung's bio-inspired research on flapping flight controls funded by the Air Force Office of Scientific Research, he is leading an Army Research Office project to develop flexible muscle actuators by using electro-active polymers (EAPs) in application to octopus-like robotic arms and flapping/morphing wings.

Furthermore, Chung has been working with the NASA/CALTECH Jet Propulsion Laboratory on some novel formation flying missions.

Over the summer, Chung spent ten weeks as a summer faculty fellow at the JPL Guidance and Control Analysis Group, working closely with Dr. Fred Hadaegh, a leading authority in distributed spacecraft systems.

Front row, from left: M. Dorothy, M. Looby, D. Rao, D. Morgan, J. Yong. Back row, from left: A. Paranjape, D. Park, D. Fong, O. Dantsker, M. Schipp, J. Holtman, J. Kim, R. Cook, M. Choksi, J. Yang, S.-J. Chung, A. Nicholas, S. Rangan, A. Leung, J. Guan, I. Chang.

Three AE Faculty Recognized for Advising Excellence

AE faculty members John Lambros, Philippe H. Geubelle, and Michael S. Selig have been honored with the Engineering Council Award for Excellence in Advising.

The top 10 percent of engineering advisors are chosen for the Engineering Council Award for Excellence in Advising. The award recognizes the important role that advisors play in the academic planning process of every engineering student on campus. Students nominate the candidates.

Lambros, Geubelle and Selig have been members of the AE faculty for 10, 15 and 18 years, respectively.

Lambros was honored with the Excellence in Advising Award previously, in 2005. Also that year, the Illinois chapter of the American Institute of Aeronautics and Astronautics chose Lambros as the AE Teacher of the Year.

Lambros studies dynamic and quasi-static crack initiation, growth and arrest in multiphase systems; quasi-static and dynamic fracture of Functionally Graded Materials (FGMs); dynamic fracture, failure and wave propagation in composite materials; dynamic constitutive response of traditional and advanced materials; thermomechanical effects and adiabatic shear banding; experimental micromechanics and multiscale experimentation; and hermomechanical fatigue of metals and ceramics.

Geubelle was chosen as the AE Teacher of the Year twice before, and he has been included numerous times on the List of Teachers Rated as Excellent by Their Students. He is the 2000 winner of the College of Engineering Everitt Teaching Award.

Geubelle's research interests are theoretical and computational solid mechanics, (dynamic) fracture mechanics, multiscale modeling of complex materials, computational aeroelasticity, massively parallel computing, solid mechanics issues in manufacturing, and computational design of novel (autonomic) materials. Geubelle also is AE Associate Head for graduate programs and directs the Illinois Space Grant Consortium.

Selig also has been included on the List of Teachers Rated as Excellent by Their Students. His research interests are aerodynamics, aerospace systems design, and aerospace flight simulation.

Lambros

Geubelle

Selig

Freund Wins 2010 Xerox Award for Faculty Research

Freund

AE faculty member Jonathan B. Freund was presented the 2010 Xerox Award for Faculty Research by the College of Engineering at Illinois in April.

Jointly appointed in Aerospace Engineering and Mechanical Science and Engineering (MechSE), Freund has been at Illinois since 2001 where he has emerged as one of the most recognized and talented researchers and leaders in the international fluid mechanics community. He was promoted to full professor in July.

Early in his career, Freund undertook the first-ever accurate simulations of turbulent jets and their sound fields, and the results are still the benchmark for research in the field. A graphic image from that work was chosen in 2000 for the American Physical Society Division of Fluid Dynamics Gallery of Fluid Motion.

Freund's current research, funded by NASA, seeks to optimize the actions of actuators for actively suppressing jet noise. In addition, he has led the research efforts of the Fluids and Combustion Division of the Center for Simulation of Advanced Rockets at Illinois.

Freund's ability to see through the complexity of physical systems and to develop original and plausible models for them has also led to several key health-related discoveries – such as mechanisms for the collateral damage to kidney tissues that occurs during shock-wave lithotripsy, and the transport of red and white blood cells in microvessels. This work was recognized in 2008 when APS's Fluid Dynamics Division recognized Freund with the Francois Frenkiel Award.

Freund currently advises seven doctoral students and has already graduated four doctoral and six master's degree students. A prolific author, Freund has published 42 articles in top journals, and he has lectured throughout the world on a variety of topics.

Chasiotis Widely Recognized in Young Career

Chasiotis

It's been quite a year for AE Associate Prof. Ioannis Chasiotis.

Topping it off was his trip in January to the White House to accept the 2008 National Science Foundation (NSF) Presidential Early Career Award for Scientists and Engineers (PECASE). President Barack Obama, himself, greeted Chasiotis, among 100 young researchers recognized. PECASE is the highest honor the U.S. government bestows on young professionals at the outset of their independent research careers.

Early this past spring, the Society of Engineering Science, Inc., chose Chasiotis to receive the SES Young Investigator Medal, a highly competitive, international award presented to a young researcher whose work has already impacted an engineering science field. The medal winner must be within 10 years of his or her terminal degree at the time of receiving the award. Chasiotis was officially recognized during the SES 47th Annual Technical Meeting to be held at Iowa State University, October 4-6.

Also this summer, the Society of Experimental Mechanics chose Chasiotis to deliver the 2011 *Journal of Strain Analysis* Young Investigator Lecture, making him only the third individual to be so honored. Again, presented to a young researcher within 10 years of having earned a PhD, this award recognizes an SEM member in early to mid-career who demonstrates considerable potential in the field of experimental mechanics. Chasiotis will present the lecture during the SEM Annual Conference and Exposition on Experimental and Applied Mechanics scheduled for June 13-15, 2011, in Uncasville, Connecticut.

Locally, in December 2010, the College of Engineering at Illinois named Chasiotis a Donald Biggar Willett Scholar. Michael B. Bragg, the College's Associate Dean for Academic Affairs and a former AE Department Head, noted the Department's wisdom in recruiting the young researcher. "You make us look smart for bringing you here," Bragg said. In April, the College chose Chasiotis for a 2010 Xerox Award for Faculty Research; he had also received a Xerox Award in 2007.

Chasiotis is in the back row, seventh from the right.

Chasiotis came to Illinois after starting his career at the University of Virginia, having earned a master's degree and PhD in Aeronautics from the California Institute of Technology in 1998 and 2002, respectively. He earned his first degree in chemical engineering in 1996 from the Aristotle University of Thessaloniki, Greece.

Chasiotis' research interests focus on MicroElectro-Mechanical Systems (MEMS), nanostructured composite materials, mechanical behavior of polymeric and ceramic nanofibers and metal nanowires and the application of atomic force microscopy in experimental mechanics.

He has been very productive, publishing 25 journal articles and four book chapters since joining AE. Among them has been a landmark paper reporting the first direct measurements of local deformation and crack growth in polycrystalline thin films—materials widely used in MEMS devices—with important implications in probabilistic analysis of brittle failure of a wide range of materials. More recently, his group reported on the very first deformation experiments with nanofibers and thin films at small time scales, which will elucidate fast physical phenomena at the nanoscale.

As a testament to the creativity, breadth, and depth of his work, Chasiotis' funding record includes substantial support from the NSF, the National Aeronautics and Space Administration (NASA), the U.S. Air Force Office of Scientific Research (AFOSR), the U.S. Army Research Office (ARO), the U.S. Office of Naval Research (ONR), and the Defense Advanced Research Projects Agency (DARPA). His research has been widely recognized with four best paper awards, the ONR Young Investigator Award, the NSF Faculty Early Career Development (CAREER) Award, the Xerox Awards, and two First Prizes in the Sandia MEMS Design Competition.

The past year's honors have been both humbling and inspiring, Chasiotis said. "It makes you feel good about the research you do and, when people recognize you, you want to do more."

Lambros Named ASME Fellow

Prof. John Lambros has achieved the status of Fellow within the American Society of Mechanical Engineers (ASME).

Fellowship status in the 129-year-old organization is conferred upon veteran members who have contributed significant engineering achievements.

Lambros has distinguished himself both nationally and internationally in research, teaching and service. He has led research projects funded by many branches of government and industry, and has made lasting contributions to the understanding of dynamic failure of advanced materials through multi-scale experimentation.

Over his 15-year professional career, Lambros's research interests have included dynamic and quasi-static crack initiation, growth and arrest in multi-phase systems; quasi-static and dynamic fracture of Functionally Graded Materials; dynamic fracture, failure and wave propagation in composite materials; dynamic constitutive response of traditional and advanced materials; thermomechanical effects and adiabatic shear banding; experimental micromechanics and multiscale experimentation; and thermomechanical fatigue of metals and ceramics.

Lambros's honors include the 2007 University of Illinois College of Engineering Xerox Research Award; the 2005 American Institute of Aeronautics and Astronautics UIUC Teacher of the Year Award; and a 1999 National Science Foundation Early Career Award. Lambros also was named to the 2005 Urbana campus Outstanding Advisors list, and served as Associate Technical Editor for *Experimental Mechanics* from 1999 to 2005.

He currently is involved in two research centers and serves on the Executive Board of the Society for Experimental Mechanics. Lambros has supervised the research of 21 graduate and 21 undergraduate students, and has instructed over 1,000 undergraduates.

He has been a member of the AE faculty since 2000, after being on faculty five years in the University of Delaware Mechanical Engineering Department. From 1994 to 1995 he was a postdoctoral research fellow at the California Institute of Technology.

Lambros earned a bachelor's in aeronautical engineering in 1988 from the Imperial College of Science and Technology at the University of London. He earned his master's and PhD in aeronautics from Caltech, in 1989 and 1994, respectively.

Lambros

Bodony Recognized as AE Teacher of the Year

For the second time in three years, the American Institute of Aeronautics and Astronautics Illinois Chapter has chosen AE Assistant Prof. Daniel J. Bodony as the AE Teacher of the Year.

Since joining the AE Department in 2006, Bodony has made a tremendous impression upon AE students. In addition to the AIAA

From left, Joel Houston and Ryan Palmer, 2009-10 and 2010-11 presidents, respectively, of the American Institute of Aeronautics and Astronautics student chapter, present AE Assistant Prof. Daniel J. Bodony with the AE Teacher of the Year Award.

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Going Green: Manufacturer to Use AE Researchers' Corn Composite Technology

White

Sottos

A Texas manufacturer has licensed with the University of Illinois at Urbana-Champaign to use a corn-based structural composite technology that AE Prof. Scott White and affiliate Prof. Nancy R. Sottos first invented about 15 years ago.

"CornBoard" will be the primary product of Corn Board Manufacturing Inc. (CBMI), based in Frisco, Texas. White and Sottos, of Materials Science and Engineering (MatSE) at Illinois, invented the production technique with Thomas J. Mackin, professor of Mechanical Engineering at California Polytechnic State University, San Luis Obispo, formerly of the Mechanical Science and Engineering (MechSE) Department at Illinois.

Said CBMI Chief Executive Officer Lane Segerstron, who founded the company in 2009, "We are so excited and honored to be able to bring the University of Illinois' patented technology to the marketplace and have an opportunity to make a positive impact on rural communities while doing our part to help the environment."

Lesley Millar, Director of the Illinois' Office of Technology Management, agreed. "We are pleased to be working with CBMI, a company that is dedicated to repurposing an agricultural byproduct into new and diverse products."

CornBoard™ is a version of wood composite board that uses corn husks and stalks (commonly referred to as corn stover) remaining in the field after corn is harvested. The structural composite is prepared by mixing the fibrous corn component with a polymer matrix, laminating the mixture, and applying heat and pressure.

In contrast to traditional particle board, plywood, or medium-density fiberboard, CornBoard™ developed at CBMI will be repurposing an underutilized biomass material. For every acre of corn grown, (over 86 million acres are grown annually in the U.S), over 4,000 pounds of corn stover are left in the field. Appropriating this biomass material into new and innovative products is an efficient and environmentally conscious means of stewardship.

CornBoard™ is a green technology in that it traps CO2. Typically, when biomass is left to decompose in the field, the CO2 previously captured and consumed by the growing plant is released back into the atmosphere. Conversely, when the corn stover is made into CornBoard™, the CO2 is "trapped" in the material. Sequestering CO2 in CornBoard™ alleviates the contribution of the decomposing biomass towards an increase of CO2 in the atmosphere.

CornBoard™ also provides an alternative to wood products, thereby reducing the demand on a less renewable resource. According to CBMI, just 2 acres of leftover corn stover biomass would produce enough CornBoard™ to build a two story house, supplying the roof decking, flooring, and outer wall sheathing.

CBMI uses a non-toxic resin binder in CornBoard™ production. This method is a safer and more environmentally conscious choice than a traditional formaldehyde-base binder.

CBMI can produce CornBoard™ in varying densities, allowing for a variety of applications. Due to this flexibility, CornBoard™ is not limited to being a wood composite board replacement, but is also being developed into a variety of products including home and lawn furniture, kitchen cabinets, door cores, and even a full line of longboards.

White Named ASC Fellow

AE Prof. Scott R. White, the Donald Biggar Willett Professor of Engineering at the University of Illinois at Urbana-Champaign, has been named a Fellow of the American Society of Composites.

The Society awards fellowship status to distinguished members who have made genuinely outstanding contributions to the composites community through research, practice, education, and service.

An internationally recognized materials engineer, White has played a leading role in the development of self-healing materials and multifunctional materials systems. His contributions in this nascent field have sparked world-wide interest in self-healing and other autonomic functionality from industry, academia, and government. When realized, the promise of these materials will enable fundamental and revolutionary advancements across a broad spectrum of industries from aerospace to microelectronics.

White also has made important contributions to three-dimensional microvascular materials systems, their functionality, fabrication, and analysis. Inspired by the circulatory networks found in biological systems, microvascular networks in engineered materials are used to supply nutrients, repair and healing, cooling, sensory feedback and other functionalities.

White has been widely recognized for his work. The Tech Museum of Innovation in San Jose, California, honored White and his team as a finalist for the 2001 Tech Award recognizing outstanding contributions in technology. The magazine *Popular Science* acknowledged his research on self-healing materials as one of the Top Ten Scientific Innovations for 2001. Scientific American recognized White's work in microvascular systems with the SciAm 50 prize in 2007.

He also received the 2008 Innovation Discovery Award from the U of I Vice Chancellor for Research, the U of I Academy for Entrepreneurial Leadership, and the Champaign County Economic Development Corporation. White was a finalist for the University of Padua's 2009 international Bepi Columbo Prize.

White holds 23 patents and applications in the materials field and is a founding partner in two start-up companies seeking to transition university technologies to industry. Joining the faculty of the Beckman Institute for Advanced Science and Technology in 2000, White leads the Autonomic Materials Group, bringing together students and faculty from a broad cross-section of scientific and engineering disciplines.

White joined the AE Department in 1990 after earning a PhD in engineering mechanics from The Pennsylvania State University. Majoring in mechanical engineering, he received a bachelor's from the University of Missouri-Rolla in 1985 and a master's degree from Washington University, St. Louis, in 1987.

White also holds appointments in the Mechanical Science and Engineering (MechSE) and the Materials Science and Engineering (MatSE) departments.

Bodony Recognized as AE Teacher of the Year, *continued from page 11*

teaching awards, he has been included on the Lists of Teachers Ranked as Excellent for five of the past six recorded semesters.

Bodony previously had been honored as a Boeing Company Scholar (1996), Department of Defense Science and Engineering Graduate Fellow (1998-2001), AFRL Graduate Research Fellow (1998), and ARCS Scholar (2003-2004).

He came to Illinois after spending two years working at the Center for Turbulence Research at Stanford University. Bodony received his bachelor's and master's degrees in aeronautics and astronautics from Purdue University in 1997 and 1999, respectively. He earned a PhD in aeronautics and astronautics from Stanford in 2004.

Bodony's research areas are aeroacoustics, computational fluid dynamics and combustion.

Hiltons Endow SDM Best Student Paper Award

Hilton

AE Emeritus Prof. Harry H. Hilton and his wife, Lois, have endowed the American Institute of Aeronautics and Astronautics AIAA Harry H. and Lois G. Hilton Best Student Paper Award in Structures.

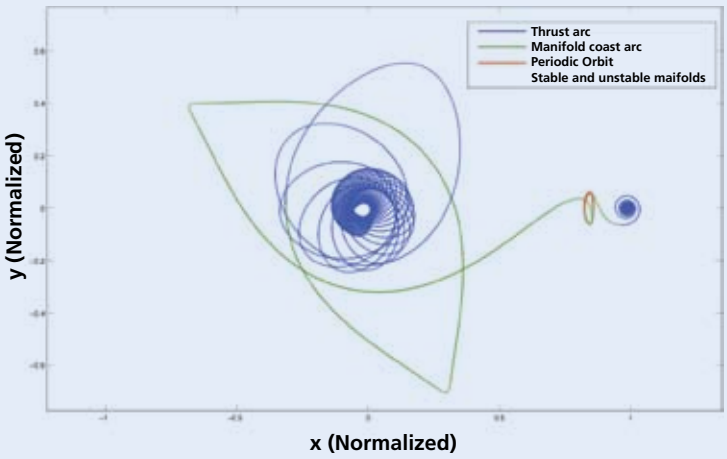
The award will be presented annually at the AIAA Structures, Dynamics and Materials Conference (SDM) for the best paper submitted by a graduate student. The award consists of a commemorative plaque and a prize derived from the fund's income. Students whose structures papers were accepted for presentation at this year's SDM conference April 12-15 in Orlando, Florida, should watch for AIAA announcements of this award.

Conway Named AAS Fellow; Delivers Prestigious Lectures

Conway

AE Prof. Bruce A. Conway has been elected as a Fellow of the American Astronautical Society (AAS), and was honored this past year with invitations to present two prestigious lectures.

The designation of Fellow is bestowed upon AAS members who have made significant scientific, engineering, academic and/or management contributions to astronautics and space. Contributions to AAS are also considered.



An example of a low-energy transfer from the Earth to the Moon, in this case taking approx. 123 days, but using very little fuel.

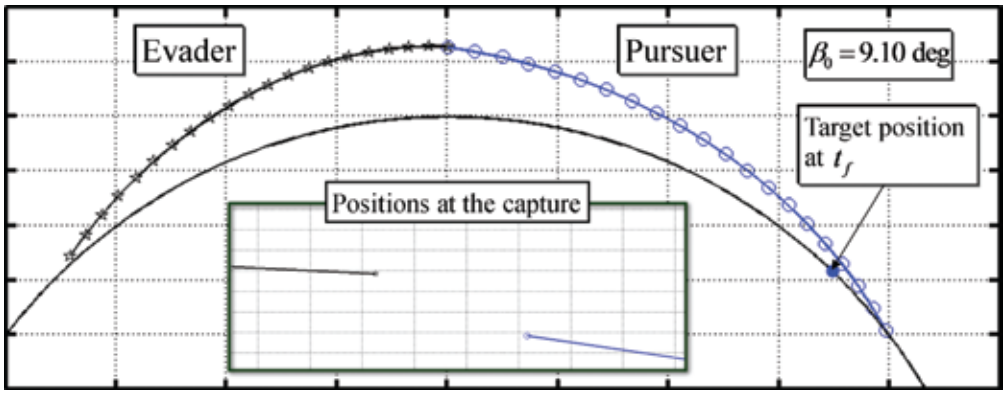
Over the past year Conway was invited to deliver the John V. Breakwell Memorial Lecture at the Astrodynamics Symposium of the 61st International Astronautical Congress this fall in Prague, Czech Republic, and the AAS Winter Space Flight Mechanics meeting plenary lecture at the society's Winter Space Flight Mechanics meeting in February in San Diego. The latter honor came with being chosen for the 2009 AAS Dirk Brouwer Award.

Both talks focused on methods available to optimize space trajectories, with Conway favoring an option using "evolutionary algorithms," a research interest of his over the past four years.

Conway has been a member of the AE faculty for the past 30 years. His research interests primarily include orbital mechanics, optimal control, and improved methods for the numerical solution of problems in optimization.

In addition to his contributions to research, Conway also has been frequently recognized for his teaching skills. Conway has been included on the campus' "List of Teachers Ranked Excellent by Their Students" 57 times. Over his career AE students chose him eight times as "Teacher of the Year." He has won every College of Engineering teaching award available, as well as the 2007 Campus Award for Excellence in Undergraduate Teaching, the University of Illinois' highest teaching accolade.

Conway earned a bachelor's degree in physics in 1973 from Macalester College in St. Paul, Minnesota. He earned a master's in mechanics in 1974 from the University of Minnesota, and a PhD in aeronautics and astronautics from Stanford University in 1981.



An example of an optimal trajectory for both the pursuer and evader missiles.

Aerospace Engineering Researchers Receive IRI/NSF Grant for Coatings and Adhesion Research

TAKEN FROM A STORY BY MICHELE TAUSSIG, OF THE INDUSTRIAL RESEARCH INSTITUTE

The Industrial Research Institute (IRI), in partnership with the National Science Foundation (NSF), has awarded $500,000 to AE Prof. Philippe H. Geubelle and his research team for work in developing a modeling tool for thin films polymer coatings.

Geubelle, also a researcher at the Beckman Institute of Advanced Science and Technology, leads the investigation, "Multiscale Modeling and Assessment of Interfacial Adhesion Failure in Polymeric Coatings and Multilayered Devices." Other project investigators include AE Affiliate Prof. Nancy R. Sottos of the Department of Materials Science and Engineering and The Beckman Institute, and John Kieffer, of the Materials Science and Engineering Department at the University of Michigan.

In addition to maintaining physical integrity, adhesives and coatings in modern devices must also provide specific function(s)—the interface must not provide a barrier to electrical or thermal continuity in some devices, or to chemical diffusion or osmosis in others.

"The goal of this project is to formulate and implement a reliable multiscale modeling tool that can ultimately be used for material design by allowing engineers to select the polymer chemistry that is best suited for a given substrate system," Geubelle explained.

"Next generation models need to predict adhesive strength and functional properties—electrical, thermal, chemical conductivity—and they need to predict the factors that will cause these properties to vary over the life of the device. Such models can facilitate development of accelerated life tests and significantly reduce both the cost and the time required to develop new products."

The Illinois researchers are collaborating with Keiffer because of his expertise in molecular modeling of polymeric materials in bulk and close to interfaces. His group also conducts some very small-scale experiments to validate his models.

Keiffer's molecular-level modeling will be used in Guebelle's multiscale cohesive framework to develop a failure model (i.e., a model of the failure of the interface) that can be used at the device-level. Sottos will perform the "macro-scale experiments"—with specimens that are a few microns in thickness and a few millimeters in length—so the researchers can validate the continuum models.

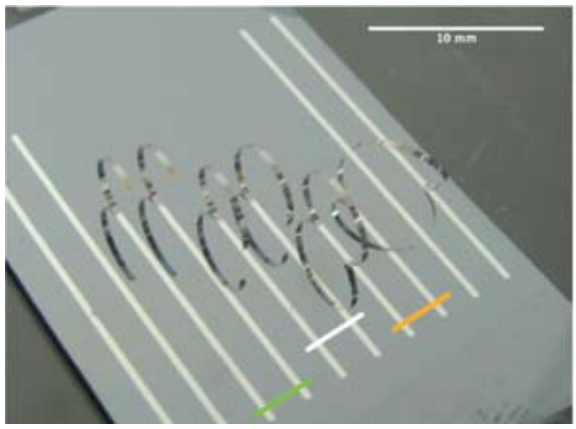
IRI is an organization of some 200 industrial and service companies having common interest in the effective management of technological innovation. IRI developed a program to bring together leaders in industrial science to identify pre-competitive fundamental research requirements that will ultimately have a direct effect on the success of American industry.

As part of an intensive process, an IRI advisory panel conducted background research among a diverse industry cross section of IRI member organizations to identify issues and challenges industries face in which targeted academic research might identify possible solutions. Ultimately, the IRI advisory panel focused attention on two topics: Renewable Energy related challenges and Materials.

NSF has awarded IRI a $1.2 million grant to pilot the Industry-Defined Fundamental Research program. The program intends to allow participating companies to influence a scientific research agenda, in a pre-competitive space, by defining key questions and then partnering with universities and companies to explore them.

This grant is a direct extension of work Geubelle and Sottos have been doing on characterizing the failure properties of thin films. That work, sponsored by the Semiconductor Research Corporation (SRC) and NSF, has been going on for about four years.

Geubelle



Laser-induced delamination of aluminum film on silicon substrate.

Emeritus Prof. Sentman Dies in Plane Accident

Emeritus Prof. Lee H. Sentman III died Saturday, March 20, 2010, in a midair airplane collision.

"Prof. Sentman was a tough, but effective educator and a world-renowned researcher in the high-energy laser area," said AE Department Head J. Craig Dutton. "Over his 35-plus year career, he made many substantive contributions to the well-being of the Aerospace Engineering Department. He will be sorely missed."

Sentman, 73, died when his RV-6 experimental aircraft collided with a Piper 32 in Levy County, Florida. Two people aboard the other plane, a man and woman, also were killed. Sentman, who had a home in Summerfield, Fla., had been heading to the Williston Municipal Airport when the accident occurred.

Sentman Scholarship Established in AE

An undergraduate scholarship fund has been established within the Department of Aerospace Engineering at Illinois, to honor the late Emeritus Prof. Lee H. Sentman. Family and friends provided donations to fully-endow the undergraduate scholarship and this will allow Professor Sentman's name to be carried forward to new generations of AE students.

Those wishing to make a contribution to this fund should write a check payable to "University of Illinois Foundation," with "Lee Sentman Scholarship Fund" in the notes section, and send the check to: Brett Clifton, Dept. of Aerospace Engineering, University of Illinois, 306 Talbot Lab, 104 S. Wright St., Urbana, IL 61801. For additional information on how to contribute to this scholarship, please contact the Department of Aerospace Engineering at (217) 333-2651 or bclifton@illinois.edu.

Sentman began his career as an assistant professor at Illinois in 1965, after earning a bachelor's degree in aeronautical engineering at Illinois in 1958, and a PhD in aeronautics and astronautics from Stanford University in 1965. He moved up the ranks, being named a full professor in 1979, and then retired in 2002. He served as AE Associate Department Head for a dozen years starting in 1987.

Among Sentman's research interests were chemical lasers, mode-medium interactions, commercialization of high-energy chemical lasers, molecular dynamics, supersonic mixing reacting flows, fluid mechanics, kinetic theory and statistical mechanics and passive satellite attitude control. He directed the Chemical Laser Laboratory, involved in developing fundamental understanding of the fluid dynamic, chemical kinetic and radiative interactions that determine continuous wave chemical lasers' performance.

Sentman had received the American Institute of Aeronautics and Astronautics Plasmadynamics and Lasers Award in 2002, and was a Fellow of that society. He was honored with the W.L. Everitt Undergraduate Teaching Excellence Award from the College of Engineering at Illinois in 1969, and was named to the Outstanding Educators of America. Illinois' AIAA Student Chapter twice chose Sentman as the Outstanding Teacher of the Year.

Commented AE Emeritus Prof. Harry H. Hilton, "I have known Lee since the middle 1950s, when he attended several undergraduate classes that I then taught. He was an ardent contributor to the well being of the Department. He expected a great deal from his students but in the end they all benefited from his demands and attention. He shall be missed by all."

Before finishing his PhD, Sentman worked as an engineer for Douglas Aircraft Corp., in Santa Monica, Calif., in 1957 and 1958; was a Guggenheim Fellow at Princeton University from 1958 to 1959; and was a senior dynamics engineer at Lockheed Missiles and Space Company in Sunnyvale, Calif., from 1959 to 1965.

He continued summer work as a research specialist for Lockheed (1968 and 1969); an aerospace engineer and a National Research Council Senior Postdoctoral Resident Research Associate for the Edwards Air Force Base Rocket Propulsion Laboratory (1971 and 1972, respectively); and a principal scientist for Bell Aerospace Co. in Buffalo, N.Y., (1973-1977).

Elam, Foley Retire from AE Machine Shop

AE students, faculty and staff said, "Thanks and good luck!" this past spring to Kent Elam and David Foley, who have been the driving forces the past 30 years behind what is now the Aerospace Engineering Machine Shop.

From left, Research Laboratory Shop Supervisor Kent Elam; Undergraduate Programs Coordinator Barb Kirts; Prof. Jim Phillips; and Instrument Maker Dave Foley, worked together during most of Elam's and Foley's 30-year careers.

Elam and Foley began their University of Illinois careers in November 1981 and September 1980, respectively, in the shop then administered by the Department of Theoretical and Applied Mechanics (TAM). The shop became part of Aerospace Engineering in 2006 when TAM merged with Mechanical Engineering, forming the Mechanical Science and Engineering (MechSE) Department.

Well-wishers from both the former TAM Department and AE gathered April 30 to congratulate Elam and Foley on their retirements.

Both Elam and Foley began their work as lab mechanics, and then moved up the ranks to senior lab mechanics and instrument makers. James W. Phillips, associate head of both TAM and MechSE, and former supervisor for both Elam and Foley, said an instrument maker "uses basic and advanced machining tools and methods to fabricate parts and specimens of difficult geometry with exceedingly tight tolerances," and "is capable of working with unusual and new materials, such as high-strength metals and composite materials."

From left, AE Prof. and College of Engineering Executive Associate Dean for Academic Affairs Michael B. Bragg presents Research Laboratory Shop Supervisor Kent Elam with the AE Staff of the Year Award.

Foley was honored for his dedication and skill when he received the Chancellor's Distinguished Staff Award in 2006.

Elam, who assumed additional responsibility when he became Research Laboratory Shop Supervisor in April 1998, was honored this spring with the AE Staff of the Year Award.

Upon retiring Elam said, "I really enjoyed my job at the University of Illinois. Not everyday was fun-filled, as is true of life, but it was a great work experience. Of course, what I will miss the most will be the people (students and staff) I worked with both in the shop, the department and campus at large."

AE Students Achieve Honors

From left, student Muktha Srinivasan, AE Prof. Gregory Elliott, and student Drew Ahern.

From left, student Jared Daum and AE Assistant Director of Advancement Brett S. Clifton.

From left, student Austin Nicholas, AE Assistant Prof. Daniel J. Bodony, and student Eric Babcock.

From left, student Jessica Wayer and AE Prof. John Lambros.

From left, AE Prof. and College of Engineering Executive Associate Dean for Academic Affairs Michael B. Bragg and student Scott Campbell.

From left, AE Prof. Bruce A. Conway and student Chris Martin.

The ***AIAA Scholastic Achievement Award***, given each year in AE to the senior graduating in May with the highest class grade point average, was awarded to **Drew Ahern of Chicago, Illinois,** and **Ryan Kim of Seoul, Korea**.

Ahern also was recognized with AE's ***H.S. Stillwell Memorial Award***, presented annually on the basis of outstanding scholastic achievement and extracurricular activities. Also winning the ***Stillwell Award*** was **Muktha Srinivasan of Rochester, Minnesota.** The Stillwell Award was established in honor of Professor H.S. (Shel) Stillwell. At the age of 27 Professor Stillwell founded the Department of Aeronautical Engineering of the University of Illinois in 1944. He served as department head at Illinois for 32 years. A graduate of the University of Minnesota, he served as Head of the Aeronautical Engineering Department at the University of Kansas prior to coming to Illinois. Professor Stillwell was influential in the design of the first ramjet-powered missile and was highly respected for his contributions to aerospace engineering education.

Ahern, who also received the ***H.S. Stillwell Fellowship***, was recognized this spring as a ***Bronze Tablet*** member, one of a select group of undergraduate students whose names are inscribed on bronze tablets displayed on the first floor of the University of Illinois Main Library. Only the top 3 percent of undergraduate students across campus receive this highly coveted award, which recognizes continuous high academic achievement.

H.S. Stillwell Problem Solving Scholarship recipients are junior-level students majoring in aerospace engineering who exhibit exemplary problem-solving skills. The 2010 winner was **Jared S. Daum of Decatur, Illinois**. A generous alumnus established this scholarship as a tribute to H.S. Stillwell and the role he played as a mentor to students.

The ***Robert W. McCloy Memorial Award*** in AE is presented annually to a junior or first semester senior student in recognition of outstanding academic performance. Professor McCloy was the first faculty member hired in the new Dept of Aeronautical Engineering. He was known for his research and teaching in propulsion and for his pioneering work in jet propulsion. The 2010 winners were **Eric Babcock of Palatine, Illinois,** and **Austin K. Nicholas of Naperville, Illinois**.

The ***Dale Margerum Memorial Award*** is presented annually to the AE undergraduate who exemplifies outstanding leadership qualities by participation in departmental extracurricular activities. Dale Margerum was a 1979 graduate who died in an accident the summer after graduation. He was very involved in extracurricular activities. The 2010 winner was **Jessica K. Wayer of Park Ridge, Illinois.**

The ***Roger A. Strehlow Memorial Award*** in AE is presented annually to a graduate student in recognition of outstanding research accomplishment. The 2010 winner was **Scott Campbell of Champaign, Illinois**. The award is presented annually to honor Professor Strehlow, who joined the aero faculty in 1961. His background was in chemistry, and he was an acknowledged expert in the field of detonations and explosions. He also made significant contributions toward the understanding of the structure, stability, and extinction of laminar premixed flames. He was an early advocate of microgravity combustion and successfully characterized the extinction and flammability states of flames under microgravity conditions. Professor Strehlow was the first AIAA Fellow in the Department of Aerospace Engineering.

The ***Faculty Outstanding Graduate Student Award*** in AE is presented in recognition of outstanding contributions to the teaching and/or research missions of the department. The 2010 winner was **Christopher S. Martin of Brisbane, Queensland, Australia.**

The ***Kenneth Lee Herrick Memorial Fellowship,*** presented annually to a graduate student in recognition of outstanding research and academic performance, was awarded to **Manu Sharma of Torquay, Victoria, Australia.**

Illinois Space Grant Scholarships are awarded to entering and continuing undergraduate students by the NASA Illinois Space Grant Consortium and are based on academic performance. **Joseph Gonzalez of Chicago, Illinois; Gary R. Weber, Jr., of Crystal Lake, Illinois;** and **Muktha Srinivasan of Rochester, Minnesota**, were among the AY09-10 scholarship recipients.

Illinois Space Grant Fellowships are awarded to entering and continuing graduate students by the NASA Illinois Space Grant Consortium and are based on academic and research performance. In AY 09-10, fellowships were awarded to **Angelo Herrera of Cheyenne, Wyoming; Miles J. Johnson of Champaign, Illinois; Michael Rybalko of Hinsdale, Illinois;** and **Robert Thomas II of Portage, Michigan.**

The ***Gates Millennium Scholar,*** presented to promote academic excellence and to provide an opportunity for outstanding minority students with significant financial need to reach their highest potential, was awarded to **Kevin A. Hargrave of Rantoul, Illinois.**

From left, AE Assistant Prof. Joanna M. Austin and student Manu Sharma.

From left, student Muktha Srinivasan with Diane Jeffers, Associate Director of the Illinois Space Grant Consortium, and fellow students Joseph Gonzalez and Gary Weber.

From left, Diane Jeffers, Associate Director of the Illinois Space Grant Consortium, with student Michael Rybalko.

The ***College of Engineering Schlader Memorial Scholarship in Engineering*** was awarded to **Stephanie M. Baker of Rockford, Illinois.**

The ***Vincent A. and Janet O'Brien Scholarship,*** established in the Department of Electrical and Computer Engineering at the University of Illinois at Urbana-Champaign by alumnus Vincent E. O'Brien to honor his parents, Vincent A. and Janet O'Brien, was awarded to **Sarah J. Cash of Champaign, Illinois.**

The ***Ruth and Harold Hayward/Tau Beta Pi Engineering Honors Scholarship*** was awarded to **Matthew Ducheck.**

Boeing Women-in-Engineering Corporate Scholarships were awarded to **Erin K. Anderson of Urbana, Illinois; Sarah C. Barrett of Orland Park, Illinois;** and **Akishita R. Kakarlapudi of Fullerton, California.**

The ***College of Engineering William L. and Elizabeth A. Ackerman Scholarship*** was presented to **Daniel E. Niemeyer of Columbia, Illinois.**

A ***Morrill Engineering Program (MEP) Academic Incentive Award***, designed to attract and retain aspiring engineers from underrepresented groups, was awarded to **Joseph Gonzalez of Chicago, Illinois**. Gonzalez also was awarded a ***Ronald McDonald House Charities Scholarship,*** for students in

continued on next page

Research Park Recognizes AE Graduate Student Intern

Aerospace Engineering graduate student Ryne T. Beeson has been recognized as one of the University of Illinois' Research Park's six most outstanding interns.

Working in the Caterpillar Simulation Center, Beeson mastered the use of complex engineering simulation software and contributed to over 30 projects over three years alongside full-time engineers.

financial need who have demonstrated academic achievement and community involvement. Gonzalez further received an ***Alliance/Merck Science Hispanic Scholarship,*** awarded to improve Hispanic student access to higher education and degrees in science, technology, engineering and math (STEM).

A ***University of Illinois Joseph R. Larson Scholarship*** was awarded to **Jie Hua Lin of Bolingbrook, Illinois.**

A ***WYSE Academic Challenge Scholarship,*** presented to winners or runners-up in the Worldwide Youth for Science and Engineering (WYSE) Academic Challenge, was awarded to **Georgiy A. Nikiforov of Bloomington, Illinois.**

Anne Suratt Memorial Awards, in honor of Anne Elizabeth Suratt, a senior in the Department of Natural Resources and Environmental Studies at the time of her death in 1997 were presented to **Elizabeth A. Chapman of Champaign, Illinois** and **Megan Danko of Woodridge, Illinois.**

A ***College of Engineering Calvin Barnes Niccolls Memorial Scholarship*** was awarded to **Heath H. Reising of Edwardsville, Illinois.**

A ***College of Engineering LTC Paul F. Drake Undergraduate Award*** was awarded to **David T. Steckel of Carrollton, Illinois.**

An ***Edward and Lillian Hussemann Scholarship*** was awarded to **Gary Weber Jr., of Crystal Lake, Illinois.**

Boeing Engineering Diversity Scholarships were awarded to **Eric Rodriguez and Viktoria G. Shikova of Palatine, Illinois.**

Gonzalez Honored as Knight of St. Pat

AE student Joseph Gonzalez was among 10 College of Engineering students knighted during the Knights of St. Pat Ball on Saturday, March 13.

In addition to being knighted, Gonzalez, an AE senior at the time, pleased Ball attendees by announcing that he had chosen the AE Department at Illinois for graduate school following graduation. His friends rewarded him with an Illini hat and jersey presented "draft day" style.

Joseph Gonzalez, middle, with Eric Elleby, left, and Raphael Chavez.

To be a Knight of St. Pat is the highest honor an undergraduate student can receive in the College of Engineering at Illinois. A Knight of St. Pat demonstrates leadership, academic excellence, and exceptional contributions to the College and its students. A committee of previous years' knights selects each new year's class. The 2010 event was particularly significant in that it was the 60th anniversary reunion of the Knights.

Illinois SHPE Wins Regional Chapter of the Year for 2009

Individual AE Undergrads Also Honored

The University of Illinois student chapter of the Society of Hispanic Professional Engineers was recognized as the Regional Chapter of the Year during the 2009 SHPE National Conference.

Four Aerospace Engineering undergraduates achieved individual honors, including Joseph Gonzalez, who was selected as the SHPE National Student Role Model of the Year (STAR Award). The organization's highest honor for a student member, the STAR Award recognizes academic excellence and outstanding contributions to the student SHPE chapter and the Hispanic community at large.

In the photo are, from left, Joseph Gonzalez; back, Emily Zavala; Eric Carreras; and, front, Michelle Diaz.

Gonzalez was also a part of SHPE/UIUC's academic Olympiad team that took first place honors.

Eric Carreras, an AE undergraduate and East Sub-Region Vice Regional Student Representative, was awarded the Future Leader of SHPE Award during the President's Luncheon. The national award is presented annually to the organization's most outstanding leaders who have greatly assisted in accomplishing SHPE's goals.

AE student Emily Zavala, President of the Freshmen Roundtable, and Michelle Diaz, Freshmen Roundtable High School Outreach Chair, competed in the convention's Extreme Engineering competition. Each was named as the "Most Valuable Engineers" of their team, and Zavala was a member of the first place team.

The Urbana campus sent 59 members to the conference, held October 28 to November 1, 2009, in Washington, D.C. This conference hosted the largest national Hispanic convention to date with over 3,700 students and professionals in attendance.

AE Junior Wins AIAA National Scholarship

AE junior Jonathan Z. Yong is among 30 undergraduates across the nation to recently have won an annual scholarship from the American Institute of Aeronautics and Astronautics.

Yong came to Illinois after earning a 2005 diploma in Mechatronics Engineering from Ngee Ann Polytechnic University in Singapore. The top student in his class of 500, Yong's senior design project there led to his developing a Micro Aerial Vehicle (MAV).

He designed the craft to be flown autonomously, and introduced in it a Touch-and-Fly system, reducing its operator controls and simplifying take-off and landing maneuvers. The work earned the Silver Award in the Tan Kah Kee Young Inventors' Competition and the Omron-Precicon Prize for outstanding performance in Automation & Robotics Technology. He later represented Singapore in the Creativity-in-Action Contest in Taiwan, and he earned an Outstanding Award for his invention's creative design and innovation.

In addition to his scholarly work, Yong also served as a 1st Lieutenant in the Singapore Armed Forces during his national service stint. Upon graduating from Officer Cadet School, he was recruited into the Military Intelligence Battalion as an instructor to assist in training pilots in radio-controlled flight and Unmanned Aerial Vehicle (UAV) operation.

He also worked as an assistant engineer and radio-control pilot for projects with the National University of Singapore and Defense Science Organization. There, he worked for a year on UAVs, both indoor and outdoor rotary, and fixed wing and flapping wing models while networking with various companies in the aerospace industry.

Currently, Yong works in the AE Department with Assistant Prof. Soon-Jo Chung on his projects in autonomous flapping flight. Yong also is enrolled in Illinois' aviation school with plans to earn his private pilot's license.

Merrett Chosen for MF3 Award

The College of Engineering has presented AE doctoral student Craig G. Merrett of Ottawa, Ontario, Canada, with a Mavis Future Faculty Fellows (MF3) Award.

MF3's purpose is to facilitate the training of the next generation of top engineering professors. The program's three main components are research, teaching and mentoring. Students in the program train to become proficient in these areas, and also select a capstone experience.

Merrett said his work in the program involved participating in a number of professional development activities, and taking the course, EOL 585: College Teaching and Academic Careers. The development activities included a Penn State workshop on improving presentation styles and a proposal-writing seminar. Merrett said the EOL 585 course was particularly useful because of the breadth and depth of topics covered, including active learning techniques, instructional methods, and an introduction to the scholarship of teaching and learning.

"Overall I've found the experiences from the workshops and the course to be rewarding, and very helpful preparation for a career in academia," he said.

Advised by AE Prof. Emeritus Harry H. Hilton, Merrett has been working on aero-servo-viscoelasticity theory for plates for his PhD research.

Aero-servo-viscoelasticity is the intersection of aeroelasticity with viscoelastic materials and servo-controls. Merrett's current work concerns the theory for flutter and divergence boundaries of an aero-viscoelastic plate and the effect of chordwise and unsymmetrical bending for a lifting-surface. The work will be combined later with servo controls to find the combination of controls, aerodynamics, and structural properties that improve the performance of a plate or a wing in air flow. Funded by the Natural Sciences and Engineering Research Council of Canada, the work has applications in morphing unmanned aerial vehicles and optimized aircraft designs.

Illinois Team Takes Third in AIAA Senior Design Competition

An Illinois team has taken third place in the American Institute of Aeronautics and Astronautics (AIAA) Senior Design Competition for the 2009-10 school year.

The team, Alecto Technical, designed a constellation of satellites that would monitor space conditions to be considered in designing for future spacecraft and space travel. The satellites were intended to monitor the magnetic field, electric field, particles in the magnetotail, and other harsh environmental conditions that a spacecraft would encounter in traveling to the second of five Lagrange points between the Earth and Sun. These points of equilibrium occur between the centripetal force a mass experiences when orbiting the Sun, and the gravitational forces of both the Earth and Sun. The second such point was of particular focus because of its location within the Earth's magnetotail and the harsh environmental conditions found there.

Pictured from left are the members of the Alecto Technical team: Krunal Patel, Dan Fong, Stan Burns, Liz Chapman, Joe Gonzalez and Drew Ahern.

Staying within a $200 million budget, the team was challenged with designing the measurement instrumentation and communications system for the satellites, as well as the timing for launches, considering assembly and testing of the satellites, and the optimum times for taking measurements. The trajectory needed to provide for each satellite to reach the second Lagrange point within the time of the peak solar activity in May 2013. The team was able to meet the challenges within budget (cost estimated at $185 million to $190 million).

The members of Alecto Technical were: Liz Chapman, team leader, risk and cost assessment; Drew Ahern, science instruments; Dan Fong, satellite subsystems; Stan Burns, attitude control and orbital; Krunal Patel, propulsion; and Joe Gonzalez, structures.

Greetings from the AE Alumni Advisory Board

Each year, the AE Department graduates another class of bright engineers who go on to apply their talents to a wide range of endeavors. In order to tap the talent of the department's alumni, the AE Alumni Advisory Board was formed. The board's mandate is to provide support for the department in a variety of ways. This year, our meeting occurred on October 8th and was very productive.

At this meeting, we welcomed four new additions to the board: Melissa Bradley (FAA), Ben Doeckel (Charles River Associates), Jason Merret (Gulfstream) and Carrie Hartman (Boeing). The membership committee continuously monitors the board membership for active participation and appropriate diversity to ensure that our AE alumni constituency is appropriately represented.

Department Head Craig Dutton kicked off the day with a Department and College of Engineering Update. Despite the state budget issues, the Department is doing very well, as evidenced by strong undergraduate and graduate enrollments, a flourishing research program and the authorization to hire two additional faculty members. The department continues to enjoy a very high ranking in the annual U.S. News & World Report assessment, and students, faculty and alumni continue to receive prestigious awards that reflect highly on the department's quality.

Next, AE Assistant Director of Advancement, Brett Clifton provided an update on gifts to the department and the AE Alumni Advisory Board Fellowship Challenge. This year, the number of donors is up almost 10% from last year. Additionally, the Fellowship Challenge is going well and is on track to meet its goal. Successful alumni events were held in Orlando (in conjunction with the AIAA Aerospace Sciences meeting), Houston and Seattle, with more planned for 2011. Contact Brett Clifton at bclifton@illinois.edu for more information about becoming a donor or participating in an upcoming alumni event.

The board then heard from Ryan Palmer with the status of the AIAA at the University of Illinois, followed by Coralie Jackman with an update on the Illinois Space Society. Professors Greg Elliott and Philippe Geubelle provided overviews of the undergraduate and graduate programs, respectively.

After lunch, the board had an "up-close" tour of Scott White's Autonomic Materials Systems lab in the Beckman Institute. Students provided the board with demonstrations and overviews of some of the exciting work being accomplished there.

Aerospace Engineering Alumni Advisory Board members pose for a photo at the end of this year's board meeting, held on campus on Friday, October 8th at the Coordinated Science Lab.

This year's "State of the Industry" presentations included a survey of the 21st century Defense environment by Ben Doeckel and a fascinating presentation on fighter aircraft training systems for pilots and crews by Steve D'Urso (Boeing St. Louis). These presentations are open to faculty and staff, providing the department with relevant information from industry.

The final student presentation of the day was by Ryan Merriman, an undergraduate participating in the Undergraduate Research Opportunity Program (UROP). Research into making Lithium Ion batteries safer for laptops looks very promising and if successful will have a huge market. The UROP program is notable for exposing undergraduates to relevant, ongoing research in the department, a win-win for the students and AE.

Next, Dave Riley presented the recommended updates to the Board's bylaws which were developed by the Bylaws subcommittee. Rick Zelenka's contributions to the recommendations were noted, despite his inability to attend the meeting. The updated bylaws that were approved at the meeting bring the board's governing document up-to-date, make needed corrections and add clarity that was missing from the old version.

continued on page 27

Jaggers, Hartman and Therriault Recognized as Outstanding Alumni

Terry J. Jaggers, BS 87, is the 2010 winner of the Aerospace Engineering Distinguished Alumnus Award. Carrie Hartman, BS 97, MS 99, and Daniel Therriault, PhD 03, are the winners of the 2010 Outstanding Recent Alumni Awards.

All were recognized at the Department's Awards Banquet held April 29 at the Alice Campbell Alumni Center.

Terry J. Jaggers

Jaggers is a member of the Senior Executive Service, and is the Principal Deputy Director of Systems Engineering for the Director, Defense Research and Engineering, in the Office of the Under Secretary of Defense. He acts on behalf of the Director and is responsible for establishing both systems engineering and acquisition technical workforce policy across the entire Department of Defense (DoD). This includes early systems engineering and pre-acquisition development planning programs, systems design, development and manufacturing policy, and independent program review and analysis for over $60 billion per year in major weapon system acquisition programs across the Department.

As acquisition technical workforce executive, Jaggers is the Department's systems planning, research, development and engineering (SPRDE) functional, as well as the production, quality and manufacturing (PQM) functional for over 40,000 DoD acquisition professionals.

In addition to his AE degree, Jaggers holds a mathematics degree from Western Illinois University, a master's degree in business administration from the Florida Institute of Technology, and a master's degree in national security strategy from the Industrial College of the Armed Forces.

Jaggers has more than 27 years experience in public service that includes military service in the Air Force and Air National Guard, Air Force civil service, and Senior Executive Service in both the Air Force and the Office of the Secretary of Defense (OSD).

Carrie Hartman

Hartman's first assignment was on the Boeing Orbital Operations team for the first 702 satellite, Galaxy XI. Since then she has participated in the planning and execution of over 18 launch and transfer orbit missions covering all Boeing satellite bus types. In September 2005, she took on the role of Astrodynamics Function Manager at Boeing.

Today Hartman leads a group of 19 engineers responsible for mission planning and orbital operations. She is also part of a team of Boeing engineers designing and planning for the next Boeing satellite product line, the Boeing 702B.

Daniel Therriault

Therriault has worked as an Associate Professor in the Department of Mechanical Engineering at École Polytechnique de Montréal since January 2004, and was recently awarded a Canada Research Chair in Fabrication of Advanced Microsystems and Materials.

Therriault performed his doctoral work as a member of the renowned Autonomic Materials research group under the guidance of his advisor, Prof. Scott White. Now as the co-director of the Multiscale Mechanics Laboratory at École Polytechnique, Therriault's research interests are the fabrication of micro/nano systems and advanced materials such as microfluidics, nanocomposites, fuel cells and laboratory-on-chips.

He has received several awards and distinctions for research and academic excellence, including the Roger Strehlow Memorial and the Carver Foundation awards from the University of Illinois. Therriault has contributed 27 peer reviewed publications to journals such as *Nature Materials* and *Advanced Materials* and has filed two US patents.

AE Alumnus to receive Guggenheim Medal

TAKEN FROM AN ORIGINAL ARTICLE BY WILLIAM LITANT, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, AERONAUTICS AND ASTRONAUTICS DEPARTMENT

AE Alumnus Robert H. Liebeck, Professor of the Practice of Aerospace Engineering at the Massachusetts Institute of Technology, will receive one of the most prestigious awards in aviation: the Daniel Guggenheim Medal.

Jointly sponsored by the American Institute of Aeronautics and Astronautics (AIAA), American Society of Mechanical Engineers (ASME), the American Helicopter Society (AHS) and the Society of Automotive Engineers (SAE), the medal recognizes individuals who make profound contributions to advancing aeronautics. Liebeck's award cites him for "distinguished engineering as evidenced by the conception and development of Liebeck airfoils and blended wing body aircraft."

Philanthropists and aviation supporters Daniel and Harry Guggenheim established the Guggenheim Medal in 1929. Its first recipient was aviation pioneer Orville Wright. Over the ensuing years, recipients have included some of the greatest names in aerospace such as William Boeing, Igor Sikorski, Charles Lindbergh, and Charles Goddard.

Liebeck, BS 61, MS 62, PhD 68, all from Illinois's AE Department, also recently was named an AIAA Honorary Fellow. Honorary Fellows are persons of eminence in aeronautics or astronautics, recognized by a long and highly contributive career in the arts, sciences, or technology thereof.

Liebeck is a member of the National Academy of Engineering and a world-renowned authority in the fields of aerodynamics, hydrodynamics and aircraft design. He attained world recognition starting in the 1970s with his novel designs for high-lift "Liebeck airfoils." He has made substantial contributions to a variety of related fields, including propeller design, windmill analysis, wing design for supersonic transports, and the design of high-altitude unmanned aircraft.

A 48-year Boeing employee, Liebeck is program manager of Boeing's Blended Wing Body project, developing a 500-passenger flying wing advanced concept subsonic transport aircraft that offers a 30 percent reduction in fuel burn when compared to a conventional tube and wing configuration. The BWB X-48B, a subscale prototype with a 21-foot wingspan, is undergoing development by Boeing and NASA.

In his spare time, Liebeck has designed wings for Indianapolis 500 and Formula One racing cars, the keel for the 1991 America's Cup winning yacht, and the wing for a World Aerobatics Championship airplane.

Liebeck was appointed to MIT's AeroAstro faculty in 2000. Professor emeritus and former MIT AeroAstro Department Head Earll Murman, who nominated Liebeck for the Guggenheim Medal, says, "Bob brings incredible aircraft design experience and wisdom to the classroom, and is always eager to work one-on-one with our students. He's a wonderful mentor to young people and young faculty."

Liebeck will receive the Guggenheim Medal at a ceremony in Washington in May 2011.

William Litant

Liebeck

AIAA ASM Alumni Cocktail Reception

Tuesday, January 4th, 2011
Orlando World Center Marriott

The Aerospace Engineering Department will hold its annual alumni cocktail reception at the AIAA ASM conference held at the Orlando World Center Marriott. The reception will be on Tuesday night, January 4th, 2011 (the first night of the conference) and it is open to all alumni from the University of Illinois. Look for an e-mail later this year for more details about the event or contact Brett Clifton at bclifton@illinois.edu or 217-333-1149 for more information. Also, please see the event listing boards at the hotel on January 4th for final details of the reception.

Class Notes

Harry B. Dyner, BS 60, MS 62, PhD 65, returned to campus from his home in California in October for Homecoming and the 50th Reunion of the 1960 class. Since earning his PhD, Dyner's career has taken him from one coast to the other. He started in 1965 in Wilmington, Massachusetts, working in the Reentry Physics area of Avco Corp.'s Missiles and Space Division. He was in charge of NASA-funded research projects on high temperature gas dynamics radiation effects.

AE Emeritus Prof. Harry Hilton with AE alumnus Harry Dyner at Homecoming 2010.

In 1967 he took a similar job at Mithras Corp. There he worked on several programs in fluid mechanics, including droplet breakup and plasma physics. His most meaningful contribution was in developing and co-patenting a combustion heated infrared light source for a countermeasure system. This became the basis for an infrared countermeasure system still used on all defense helicopters, including Marine-1. In 1973 Dyner left the Boston area for Southern California to work for Aerospace Corp. He spent 10 years working in the Advanced Ballistic Reentry Systems (ABRES) program, and in the Advanced Space Plans and the Space Test Directorates. There he managed the integration of the first Air Force experiment to fly on the Space Shuttle, STS-4. In 1983 he he began working on Missile Defense (Star Wars) and other programs for SPARTA, Inc., continuing there until his first retirement in 1995. Dyner's former boss called him back to work for another small company, Space Applications. He managed their West Coast operation as it was being shut down. He then joined Boeing in Seal Beach, finally retiring in 2001. At Boeing he managed a group involved with new communication satellites and a group working on classified programs. Said Dyner, "My more than 40 years in the aerospace industry was highly varied and always interesting, and I owe it all to the education and training at the U of I."

Barry Butler, BS 79, MS 81, PhD 84 *Mechanical Engineering*, has been named Interim Provost at the University of Iowa. Butler has been Dean of the College of Engineering at Iowa since 2000. He first came to the university in 1984 as an assistant professor of mechanical engineering. He was named a full professor in 1995 and the college's associate dean of academic programs just two years later. He was named interim dean of the college in 1999 before becoming dean. Butler also serves as campus coordinator of the Iowa Space Grant Consortium. He currently serves on the boards of several state and national technology-based organizations committed to economic growth and advancing science, technology, engineering and math education, including the American Wind Energy Association Board of Directors and co-chair of that association's research committee. He also serves as Iowa Gov. Chet Culver's delegate to the Aerospace States Association. Butler is an active participant in Eastern Iowa's Corridor STEM (Science, Technology, Engineering and Math) Initiative, and has been a strong advocate for working with industry, community colleges and Iowa's K-12 educators to promote STEM education.

AE alumni **Christopher N. D'Souza**, BS 83, MS 85 (NASA Johnson), **Larry Moody** BS 81, MS 89 (Boeing), **Bernard "Ben" P. Paul, Jr.**, BS 78 *Fluids Engineering (Chicago),* MS 80 (Boeing), and **Aaron Trask**, BS 98, MS 00, PhD 02, (Apogee Integration) and alumnus **Andy Broeren**, MS 96, PhD 00, both *Mechanical Engineering*, (NASA Glenn), joined AE faculty and students at an American Institute of Aeronautics and Astronautics (AIAA) and American Astronautical Society (AAS) conference held in August in Toronto, Canada. Areas covered during the Astrodynamics Specialists Conference were astrodynamics, guidance navigation and control, and atmospheric flight mechanics. AE Faculty members attending were Michael Bragg, Soon-Jo Chung, John Prussing, Michael Selig and Victoria Coverstone, who was the conference's Astrodynamics General Chair. Graduate students were Albert Lee, Aditya Paranjape, Thomas Schlapkohl, and Daniel Uhlig.

Douglas Isbell, BS 86, is a Risk Communications Specialist for NASA Jet Propulsion Laboratory in Pasadena, California. His responsibilities include helping to support the successful launch of missions carrying nuclear power sources, from the next Mars rover to missions to the outer planets and beyond. Isbell had been working in astronomy outreach.

Michael Swartwout, BS 91, MS 92, became an assistant professor of Aerospace & Mechanical Engineering at Parks College of St. Louis University in 2009. Prior to then he was on the physics staff at Washington University in St. Louis.

AE Alumni **Aaron Trask**, BS 98, MS 00, PhD 02, of Apogee Integration, **William T. "Todd" Cerven**, BS 97, MS 99, PhD 03, of Aerospace Corporation, **Prasun N. Desai**, PhD 05, of NASA Langley, and **Bradley J. Wall**, MS 04, PhD 07, of Embry-Riddle University met with AE faculty and students at the American Institute of Aeronautics and Astronautics (AIAA) and American

continued on next page

AE Alumna Featured in Discovery Channel Video Clip

AE Alumna Julia Laystrom-Woodard, BS 00, MS 04, talked about her career as an aerospace engineer in a video clip series, "STEM Careers for Students," a production of the Discovery Channel.

The clip can be viewed on YouTube at http://www.youtube.com/watch?v=xfDE0Ki8HA8.

Laystrom-Woodard works for CU Aerospace, operating in the Electric Propulsion Laboratory on the University of Illinois at Urbana-Champaign campus. Her projects are the Micro Cavity Discharge thruster and CubeSail.

Enjoying math and science since her childhood days, Laystrom-Woodard tells how poor vision kept her from realizing her dream of being an astronaut. Instead, she became an aerospace engineer, and is enthusiastic about her choice of the Department of Aerospace Engineering at Illinois for her education.

The STEM video clips are part of Discovery Communications' "Be The Future" initiative. The venture has launched a programming block, education curriculum and tools to inspire student learning and careers in the sciences, and support the White House's efforts behind science, technology, engineering and mathematics (STEM) education.

Laystrom-Woodard

Class Notes, *continued fom page 26*

Astronautical Society (AAS) Space Flight Mechanics meeting held in February in San Diego, California. Trask served as the AAS General Chair for the meeting and Cerven was a session chair. AE faculty attending were Bruce Conway, Victoria Coverstone and John Prussing. Former AE postdoc Mauro Pontani, now of the University of Rome, and current graduate students Alex Ghosh and Christopher Martin presented papers.

Kelly (Griswold) Schalbe, BS 03, has received the Distinguished New Engineer Award from the Society of Women Engineers. Schalbe is a Customer Engineer for the Boeing Company in Seattle, Washington.

Alex Rechenmacher, BS 06, earned his law degree in 2009 from J.D. Chicago-Kent College of Law. He now works for the Law Offices of Edward P. Graham, Ltd., in Naperville, Illinois.

In Memoriam

Dan Spadoni, BS 69, died January 2, 2010. The 64-year-old was retired from Science Applications International in Washington, D.C.

Greetings from the AE Alumni Advisory Board, *continued fom page 23*

Finally, Mike Miller (Comspace Development) was elected to serve as incoming President of the board and Mark Crowley was voted in as Vice President. It has been my privilege and pleasure to serve the department in this capacity over the past two years and I am proud to be affiliated with the department, the university and our outstanding alumni.

Best regards,

Dan Jensen, '88
AE Alumni Advisory Board President 2008–2010

Recent AE Alumni Gatherings

AE alumni astronauts chatted with College of Engineering Dean Ilesanmi Adesida at the Houston Alumni Event, held at The Houstonian Hotel on February 18, 2010. From left are Mike Hopkins, Adesida, Scott Altman and Steve Nagel.

Many AE alumni attended the Seattle Alumni Event that the College of Engineering hosted during the White Sox vs. Mariners game on July 20, 2010. AE Department Head Craig Dutton is second from the right.

AE Department Head Craig Dutton, middle, and College of Engineering Executive Associate Dean Mike Bragg, left of Dutton, join AE alumni at the cocktail reception held at the 2010 AIAA conference in Orlando, Florida.

Thanks to Our Donors

The alumni and friends listed here contributed to Aerospace Engineering during Fiscal Year 10 (between July 1, 2009 and June 30, 2010). Thank you for your gifts! (All degrees are in AE unless otherwise indicated.)

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Celia G. Snyder
David E. Snyder, BS 89 and Ellen E. Pastorino
Esther B. Garret Solar, BFA 70 *Graphic Design*, BFA 71 *Art Education,* MSW 82 *Social Work*
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Why I Give

BY MARK CROWLEY

My wife and I started our undergraduate educations at Illinois and that set the stage for our future careers. It was an easy decision to give back to the institution that means a lot to us. We've been giving on and off for many years, increasing the amount as we could afford to give more. Also, I've been helping with the AE Alumni Advisory Board's efforts in raising the money to fully endow a graduate student fellowship, which will be a huge benefit to the Department and future graduate students.

As an alum from the Department of Aerospace Engineering, I personally give to help the AE Department continue to maintain and improve its level of educational standing. In today's budget environment, the department can use as much help as possible and I hope that other alums see the urgency of how important individual and corporate donations are to the department and the University of Illinois as a whole.

Knowing what my education and experience at Illinois meant to my career, it's an easy choice to give back and help the next group of students that will hopefully be leaders in our field. I believe that any great program benefits from the experiences of their alumni out in industry. It allows the Department a continuing connection to aerospace-related companies, strengthening the recruiting pipeline and increases the chances of research projects and corporate tie-ins.

I hope that our loyal and dedicated AE alumni base will realize the importance of giving back and will provide gifts of any level, as every little bit helps. Together we can make a difference and continue to honor the Department that provided us so many great memories and prepared us for the real world.

Mark Crowley is the President & CEO of SolFocus in Mountain View, California, and he resides in Morgan Hill, California. He received his BSAAE from Illinois in 1983, MSME from Drexel University in 1989 and his MSM from Stanford in 2002.

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You can also make your gift online by going to http://www.ae.illinois.edu/alumni/giving.html.

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Department of Aerospace Engineering
University of Illinois at Urbana-Champaign
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104 South Wright Street
Urbana, Illinois 61801

Calling All Aerospace Engineering Fans!

AE encourages you to show your loyalty by becoming a fan on the Department's new Facebook page: **Aerospace Engineering at The University of Illinois**.

"Facebook is another tool for us to achieve our goal of engaging AE students and reaching out to and keeping in contact with AE alumni and friends," said Brett Clifton, Assistant Director of Advancement and Alumni Relations for the Department. "After being 'live' for just one day, we had over 120 fans of the page and we hope that number will continue to grow," said Clifton. *(By this newsletter's publication date, the number grew to about 345.)*

The page will be updated with news stories, important dates and links back to the Department's website.

For questions or comments, contact Brett Clifton, Assistant Director of Advancement & Alumni Relations, at bclifton@illinois.edu.