Department of

Mechanical & Aerospace Engineering

Spring 2009

www.mae.ufl.edu

Student Brandon Krick installs a space tribometer onto the Materials International Space Station Experimental Platform scheduled to fly in orbit for one year, beginning summer 2009. **Story on Pg. 4.**

UF | UNIVERSITY of FLORIDA

The Florida Center for Advanced Aero-Propulsion

FCAAP technologies for the next generation of aircraft

The aerospace industry in the state of Florida employs some 83,000 highly skilled workers and makes an impact on the state economy estimated at $100 billion. In an effort to help the industry remain competitive, some of the state's premier researchers in aerospace and aviation have collaborated to form the Florida Center for Advanced Aerodynamics and Propulsion (FCAAP). Six MAE faculty were among those premier researchers who made possible this $14.57 million center, which was approved by the Florida Legislature during the 2008 legislative session as one of only two centers of excellence within the state. The UF faculty are: Louis Cattafesta, Andreas Haselbacher, William Lear, Subrata Roy, Mark Sheplak, and Lawrence Ukeiley.

The FCAAP, operating from its base at Florida State University (FSU) in Tallahassee, is using the collaborative efforts of FSU, UF, Embry-Riddle Aeronautical University and the University of Central Florida to bridge the gap between academia and industry and give university-produced innovations a push toward commercial viability.

Farrukh Alvi, a professor of mechanical engineering at the Florida A&M University-Florida State University College of Engineering and the director of FCAAP says the center "fills a huge need in the aerospace and aviation industries for research and development on next-generation aircraft and spacecraft, as well as work force training to help keep these highly skilled and high-paying jobs in Florida. We intend to be the advisory and technical focal point for NASA, the military, private industry

Key Competencies & Expertise of FCAAP

- Active Flow, Noise and Vibration Control
- Advanced Propulsion & Turbomachinery
- Sensor and Actuator Development
- Advanced Diagnostics
- Aero-Thermodynamics, Aeroacoustics
- High Performance Computation
- Smart Materials, Systems & Structures

Primary Facilities of FCAAP

- Microdiagnostics Laboratory
- Microfluidics and MEMS Labs (UF)
- Nanomaterials Labs
- Microfabrication & Rapid Prototyping (UF)
- High Temperature Anechoic Jet Facility
- Anechoic Flow Facility (UF)• STOVL Test Facilities
- Subsonic & Supersonic Wind Tunnels (FSU, UF, UCF)
- Unsteady Wind Tunnel (UF/REEF)
- Ctr. for Advanced Turbine & Energy

Developing technologies for a wide range of aircraft, spacecraft and their sub-systems.

and the state of Florida with regard to this critical sector of our economy."

Professors Cattafesta and Ukeiley are the co-directors of UF's arm of the FCAAP. In the first year of operation, UF received about $750,000 of FCAAP funds. Those funds were distributed among six faculty members to conduct research. Cattafesta's research focused on active flow and nose control; Ukeiley's is also focused on flow control with an emphasis on fluid structure interactions; Leer and Roy focused on advanced propulsion and Sheplak focused on sensors. Currently, the faculty members are conducting research in their individual laboratories along with larger collaborative efforts and also collaborating with researchers from the partner institutes.

This summer marks the one-year anniversary for the FCAAP. The three-year plan for the center is to become self-sufficient by finding industry funds to replace state funds. UF researchers have made significant progress in this regard, with the initiation of 9 externally funded FCAAP projects in the last year.

DEPARTMENTAL HAPPENINGS

Dr. Warner Dahm, a former professor in Aerospace Engineering at the University of Michigan, and the current Chief Scientist for the United States Air Force gave this year's Ohanian Lecture on Februatry 18 in the Reitz Union Auditorium. The title of his lecture was, "Key Air Force Research Priorities: Science and Technology at the Leading Edge." The lecture held a broad interest to all UF faculty in science and engineering disciplines and was very well attended. Dr. Dahm also met with MAE faculty over a two-day period, during his visit.

Dr. Warner Dahm and MAE Dept. Chair S. Balachandar

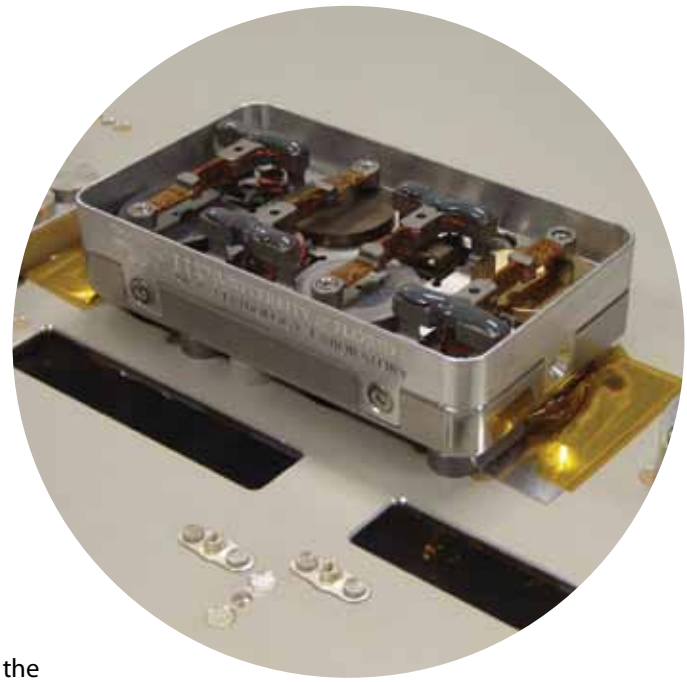
Pictorial

What does it take to get your experiment into space? Professor Greg Sawyer and his tribology lab were fortunate enough to find out. Over a two-week period at NASA's Marshall Space Flight Center in Huntsville, Ala., Sawyer and his team assembled and installed 37 samples in a Passive Experiment Carrier (PEC) that will attempt to withstand the environment of space. For more details on Tribology please see the December 2008 Materials Research Society (MRS) Bulletin which features an in-depth explanation from Sawyer, available on-line at http://mrs.org.

– Brandon Krick contributing author

1 Brandon Krick assembling the tribometers in the NASA workshop prior to experiment integration in the clean room.

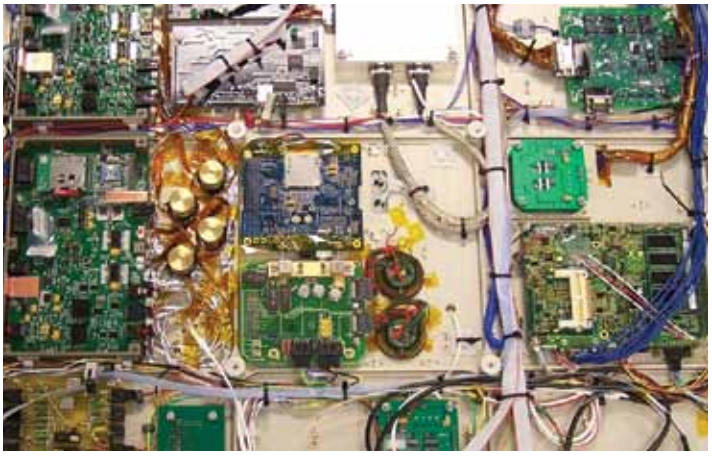
2 Krick placing and aligning the tribometers on the MISSE 7 baseplate. MISSE stands for "Materials on the International Space Station Experiments".



3 Mounting the tribometers to the baseplate using required torque specifications to ensure that the tribometers will be securely fastened to the MISSE platform.

4 The "ram" set of tribometers mounted on the MISSE 7 baseplate. The ram side of the ISS faces the direction of travel. This side will face the most open exposure to space climate and environment, particularly atomic oxygen, as the ISS travels at 27,700 kilometers per hour

MISSE 7 AFRL/UF team. Left to right: John Jones, Brandon Krick, Greg Sawyer, Justin Lenoff, Shane Juhl.



5 The experiment control electronics mounted to the bottom side of the baseplate directly beneath the experiments.

6 Professor W. Greg Sawyer holding the MISSE 7 Passive Experiment Carrier (PEC). The PEC will contain the MISSE experiments and be mounted to the outside of the International Space Station. *Note: This PEC has flown in space before with the MISSE 5 experiments.

7 The "wake" tribometers mounted in the MISSE 7 PEC with all the other MISSE experiments. The wake side of the ISS faces the direction opposite the ram. This side experiences Ultra High Vacuum (UHV).

8 The "ram" tribometers mounted in the MISSE 7 PEC with all the other MISSE experiments. Both the "wake" and "ram" sides will experience temperatures ranging from -40 to 60 C as well as UV radiation.

Faculty News

(L)Tony Schmitz; (R)Scott Banks

SCOTT BANKS was named 'Researcher of the Year' and **TONY SCHMITZ** was named 'Professor of the Year' at the annual MAE Alumni and Awards Banquet, held April 17 at the UF Hilton.

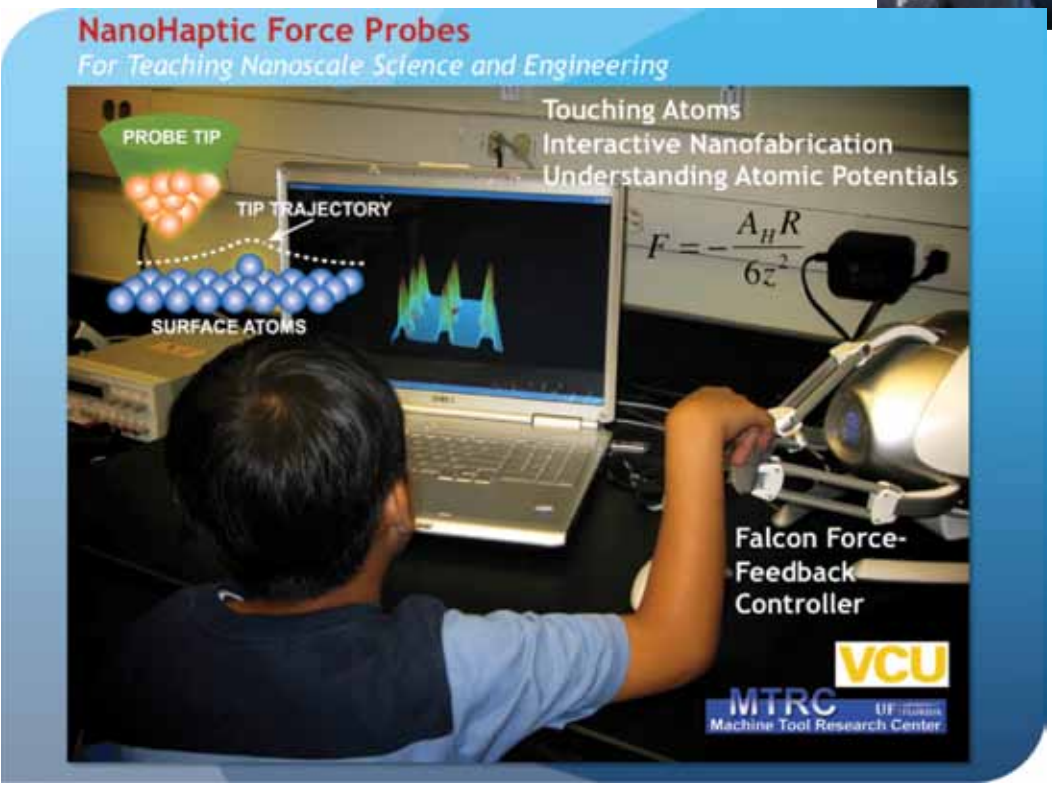
RAFI HAFKA received the first American Institute of Aeronautics and Astronautics/ American Society for Composites James Starnes Jr., Award. The purpose of this award is to foster and recognize the values that Dr. Starnes Jr., a leader in the fields of structures and materials, inspired throughout his career, specifically: excellence in structural mechanics; mentoring of colleagues, especially younger colleagues; and professional service to societies, boards, panels and special technical committees and investigations. Hafka was recognized for "pioneering work on optimization techniques for composite structures, mentoring of countless undergraduate and graduate students, and exemplary service to the profession". Prior to joining UF's MAE faculty, Hafka worked with Israeli Aircraft Industries, NASA, The Technion, Illinois Institute of Technology, and the Virginia Polytechnic Institute and State University. He has written two textbooks and several hundred papers on structural and multidisciplinary optimization, and has coauthored papers with hundreds of his students and his peers. Hafka received a plaque, a medal, an honorarium from ASC, and travel expense allowance and registration for the 50th SDM Conference in Palm Springs, CA where the award was presented.

MARK SHEPLAK and **BHAVANI SANKAR** received the University of Florida College of Engineering Doctoral Dissertation Mentoring Award.

Warren Dixon shows a subject sitting on a modified leg curl machine during electrical stimulation. The electrodes are placed on the left quadriceps muscle to generate desired leg movement. The computer algorithm calculates the required electrical voltage for stimulation using angle feedback from digital encoder attached to the leg curl machine.

A launch from the USS Eisenhower.

Professor Nagaraj Arakere on board the USS Eisenhower



Photograph of elementary student using a virtual haptic simulation. In his paper, Curtis Taylor describes the development of a haptic feedback system interfaced with a nanoscale virtual environment to facilitate exploration, perception and conceptualization of nanoscale science and engineering concepts. The system is especially accessible to individuals who are visually impaired since, through haptics, it provides a physical mechanism to aid in perception and conceptualization of nanoscale forces and objects. An overview of learning modules and instructional material for use with the haptic interface are discussed. Taylor believes the developed simulation will actively and effectively engage today's learners in nanotechnology science.

WARREN DIXON received the 2009 AACC O Hugo Schuck Award for his paper, "Nonlinear Tracking Control of a Human Limb via Neuromuscular Electrical Stimulation." K. Stegath, N. Sharma, and C.M. Gregory were co-authors. The award recognizes the top two papers (one for theory and one for applications) that were published in the previous year's American Control Conference.

CURTIS TAYLOR received the Best Paper Award from the ASEE Mechanical Engineering Division at the ASEE Conference in Austin, TX, for his paper entitled, "Development of a Nanoscale Virtual Environment Haptic Interface for Teaching Nanotechnology to Individuals who are Visually Impaired". The award included recognition at the session entitled, "Outstanding Contributions to Mechanical Engineering Education", and included a monetary prize.

NAGARAJ ARAKERE was chosen as a representative of the University of Florida to be flown on the air craft carrier USS Eisenhower during operations in the Atlantic Ocean. His mission included nighttime operations, carrier landing, catapult launch and an overnight stay.

Internationally Renowned Researcher Cristescu Retires

In May 2009 the University of Bucharest celebrated the 80th birthday of Professor Nicolae Cristescu with two days filled with seminars, speeches and dinners. On May 7th the members of the Romanian Academy, which is similar in stature to the National Academy of Science and the US National Academy of Engineering, assembled along with the faculty of University of Bucharest. The meeting was held in a majestic amphitheatre in the heart of the campus. Among the participants was Ioan Panzaru, the President of the University of Bucharest. Dr. Victor Tigoiu, the Dean of Faculty, presented Cristescu a copy of the book *Istorie Universala* signed by all Academy Members. After the meeting a luncheon was held in honor of Cristescu.

Professor Nicolae Cristescu and Dr. Ioan Panzaru, President of the University of Bucharest

The second day of the celebration mainly focused on intellectual deliberations. The daylong seminar entitled *Mecanica Mediilor Deformabile* and dedicated to Cristescu, focused on the contributions of Cristescu to the field of continuum mechanics. The speakers, from various countries in Europe, talked about topics ranging from contact mechanics to viscoplasticity, from dynamics to complex material behavior. The topics reflected the fact that Cristescu, over the past 60 years, has worked on a variety of phenomenon ranging from dynamic behavior of materials to viscoelasticity and viscoplasticity. A collection of papers dedicated to Cristescu was released by Springer in a book entitled *Variational Inequalities with Applications* and authored by Mircea Sofonea of the University of Perpignan, France and Andaluzia Matei of the University of Craiova, Romania.

Cristescu was born on February 17, 1929 in Chelmenti, Romania. He attended the University of Bucharest and received his bachelor's degree in engineering in 1951. He received his PhD from the Romanian Academy in 1955 and the Doctor Habil degree in 1965 from the University of Bucharest. Cristescu started his academic career in 1951 as an assistant professor at the University of Bucharest, and rose through the ranks and served as the Department Chairman during 1982-90. He became the rector (president) of the university in 1990. During the sixties and seventies Cristescu was a frequent visitor to Johns Hopkins University and the University of Florida, spending a few months to a year at a time. In 1992 Cristescu moved to the US permanently and accepted the position of Graduate Research Professor in the UF MAE Department. He is a Fellow of the Romanian Academy and also the Academia Europaea (European Academy). He is the author of 21 books and more than 200 papers.

In his retirement, Cristescu plans to spend a considerable amount of time at the University of Florida. He plans to write more books and travel to various institutions around the world where he has been invited.

Departmental Happenings

Elementary Students Visit the UF Machine Tool Research Center

On March 6, 2009, more than 40 fourth grade students from Lawton Chiles Elementary School in Gainesville visited the Machine Tool Research Center. Professors Tony Schmitz and Curtis Taylor gave students a variety of experience, from hands-on manual milling to exploration in a virtual environment.

Curtis Taylor demonstrates a haptic (touch and force) feedback system interfaced with a nanoscale virtual environment to facilitate exploration and perception of nanoscale science and engineering concepts.

Dr. Schmitz describes a manual milling machine and aids students in performing test cuts in an aluminum workpiece using a ball endmill.

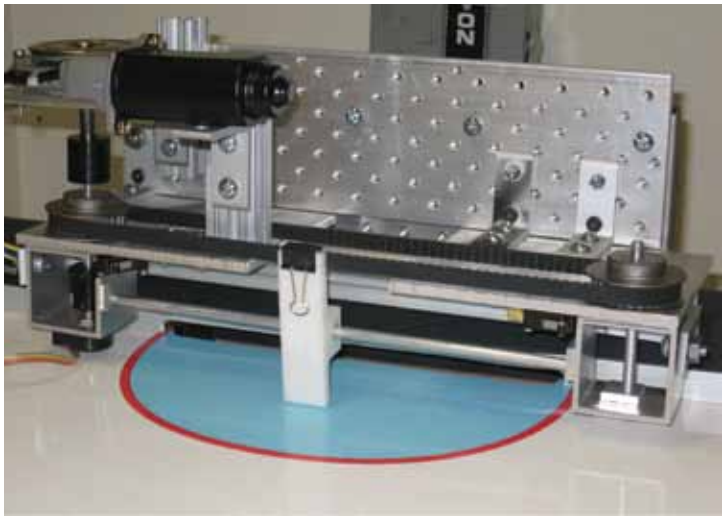
Students visit with their favorite character from the Pigskin Professor video series, "The Nutty Professor" (also known as Professor Greg Sawyer).

Student News

Professor Schmitz and his Structural Dynamics students

Students from EML 6267, Structural Dynamics of Production Machinery, visited Special Tool Solutions, Jacksonville, FL, on January 28, 2009. STS provided a tour which included a description of the entire production sequence from solid model design to path planning to machining on computer numerically controlled milling, shaping, and mill-turn centers. The students are pictured next to a shaping machine that produces complex gears. EML 6267, taught by Dr. Tony Schmitz, is also available via the UF EDGE program at www.ufedge.ufl.edu.

ASME students, under the direction of Professors Carol Chesney and Carl Crane took first place at the annual UF E-Fair. Their exhibit featured an air hockey table showing sensing and control, and an air-hockey robot designed by Crane and his CAD students. The air-hockey table was used the undergraduate controls lab course and the air-hockey robot was the final design project for CAD students. The Engineering and Science Fair (E-Fair) is an annual science fair put on by societies and departments in the College of Engineering to stir the interest of middle school-age students in science and engineering careers. The fair is part of Engineers' Week, the nationwide annual celebration of engineering that centers on the birthday of our first president, George Washington, who was a civil engineer.



The Air-Hockey Robot, designed by Professor Carl Crane and his CAD students.

University Scholars

The University Scholars Program introduces undergraduate students at UF to the exciting world of academic research. In the program, students work one-on-one with UF faculty on selected research projects. The goal is that through this initiative, students will take away an understanding of and appreciation for the scholarly method. The 2009-10 MAE University Scholars are:

CHASE COFFMAN (Mark Sheplak)
GABY CRUZ (Pamela Dickrell)
KATHERINE FAIST (Gloria Wiens)
DAVID GUERRA (Louis Cattafesta)
UTSAV SAXENA (Subrata Roy)
KEITH STOBER (Lou Cattafesta)
LOUIS VAZQUEZ (Malisa Sarntinoranont)
PATRICK WALTERS (Eric Schwartz).

The **SAE FORMULA TEAM** was honored for finishing 9th overall out of 121 universities from around the world at the Formula SAE Michigan competition.

The **SAE BAJA TEAM** was honored for finishing 3rd overall out of 120 universities from around the globe at the Baja SAE Montreal competition the American Society for Engineering Education.

2009 Student Award Recipients

Maj. General Curtis M. Bedke, Commander of the Air Force Laboratory, presenting the award to Mike Nixon.

Department Chair S. Balachandar and Dissertation Award winner Chris Lightcap.

Liming Xion received the Graduate Student Research Award.

Sixty-four students and two student teams were honored this year at the MAE Annual Awards Dinner, held April 17, at the University of Florida Hilton Conference Center. Among those receiving awards were:

MIKE NIXON, who earned his PhD under Oana Cazacu in 2008 was given the "Scientific and Technical Achievement Award (Individual)" by the Air Force Research Lab at its annual awards ceremony. This award recognizes the person who has achieved the most notable distinguished in-house technical achievement. Last year's winner was Brian Plunkett, another student of Cazacu. We will look for a three-peat next year!

FOTOUH AL-RAQOM, a PhD student under joint supervision of S.A. Sherif and James Klausner, won the inaugural 2008 Emirates Energy Engineer Award for her accomplishments in the field of energy management and energy efficiency in Kuwait. The award ceremony was held in Dubai, UAE on January 20, 2009. The award recognizes an individual for outstanding accomplishments in promoting the principles and practices of energy engineering in the Arabian Gulf Cooperation Council Countries. Al-Raqom's Ph.D. topic is the field of hydrogen production.

JARED LEE RECEIVED a 2009 NSF Fellowship.

JOSUE MUNOZ received a SEAGEP Fellowship (NSF funded program at UF) and an Air Force Research Laboratory's Space Scholars Summer Internship

TROY RIPPERE received a NASA Graduate Student Research Program Fellowship

HYO SOO KIM was the 2008 Samsung Electro-Mechanics 4th '1nside Edge' International Thesis Competition Silver Medalist, received a 2008 Student Scholarship for the annual American Society for Precision Engineering conference (including $1000 travel stipend) and received the 2008 UF COE Outstanding Academic Achievement Award

TYLER VONDERHEIDE, a senior in MAE, won 2nd place in the ASME Old Guard Prize - Oral Presentation Competition. His talk was entitled "effect of nanoparticles on the gas permeability of composite laminates".

BENJAMIN CHAPMAN, won the UF/HHMI Science for Life Research Award. HHMI stands for Howard Hughes Medical Institute. The award carries $2500 + $500 travel fund.

NATHAN BRANCH, was awarded the Science, Math, and Research for Transformation (SMART) fellowship. This competitive fellowship is sponsored by the Department of Defense (DoD) and the American Society for Engineering Education.

The 2008-09 Outstanding Gator Scholars were **MICHELLE DITTO** (4-year scholar) and **EDUARDO VILLABA** (2-year scholar)

CHRIS LIGHTCAP (DSC), **BRETT STANFORD** (SMDM) and **PATRICIA DALYANDER** (TSFD) received Dissertation Awards.

LIMING XION received the Graduate Student Research Award.

DANIELLE PISANO received the Teaching Assistant Award.

RYAN CARDILLO and **KATHERINE FAIST** both were awarded Outstanding Poster Awards by Pi Tau Sigma.

Individuals receiving undergraduate scholarships were also named during the ceremony.

Famous Alumnus

BARB SAMARDZICH

received her bachelor's degree in mechanical engineering from the University of Florida. She also holds a master's degree in mechanical engineering from Carnegie-Mellon University and a master's degree in engineering management from Wayne State University. Samardzich has worked for Ford Motor Company since 1990 and currently serves as vice president, Powertrain Engineering. She was a key figure in the development of several Ford models including the Focus, Thunderbird and Escape Hybrid, and she led the redesign and delivery of the 2005 Mustang. Samardzich also developed the Shift Quality Health Chart, which is now used on over 3 million transmissions every year at Ford plants.

Previously Samardzich held a variety of positions within Ford, including chief engineer for the F-Series Super Duty Commercial Trucks, and as quality director for Ford Brand products in Ford of Europe. Prior to 1990, Samardzich was a thermal design engineer in Westinghouse Electric's Nuclear Fuels Division.

Samardzich was awarded the 2004 Women in Engineering Top Achievement Award by Design News, and in 2005 she was named a Leading Woman in the North American Automotive Industry by Automotive News. Married and the mother of two children, Samardzich also sits on the boards of several universities and non-profit organizations.

– Janice C. Kaplan, contributing author

Alumni News

Thank you to all of our alumni who have sent in reply cards. We are pleased to introduce our new on-line alumni update form available at: www.mae.ufl.edu/alumni/request/index.php Use the password: UF-MAE. We look forward to publishing many new updates in our Fall 2009 newsletter.

STANLEY H. APTE (BSAE, 1950)
Apte is an attorney. His wife, Laura, passed away in July 2007. His son is circuit judge Alan S. Apte. Apte states he, "Intends to retire this year (hopefully)." And is "still practicing law because I haven't gotten it right yet, after 50 years. Probably should have stayed working as an aero engineer. My sole claims to fame are the production of my son Alan, and I helped the design and production of the F84F Fighter during the Korean War."

ROBERT C. MATTALINE (BSME 1952)
Mattaline recently retired from McDonnell Douglas. His wife is Betty J. Mattaline and he has six children and sixteen grandchildren. Mattaline holds an MBA from St. Louis University (1957) and a J.D. from Laclede School of Law (1985).

FRED FAGAN (BSAE 1966)
Fagan is a program manager from Energy Systems West. He holds an MSEE and MBA from USC and a Ph.D. from Claremont Graduate University.

STEPHEN W. ADAMS (BSME 1981)
Adams is a utility engineer manager for the City of Punta Gorda (FL). His wife is Deborah.

MICHAEL MCGHEE (BSME 1995)
McGhee workds as an independent contractor – project engineer. His wife is Angela and they have four children.

JENNIFER (RICHARDS) GARBOS (BSME 2000)
Garbos is a Senior Product Development Engineer for Hallmark Cards. She married Gregory Garbos in September 2007. Garbos writes that she "previously worked for Ford Motor Company and moved to Hallmark to engineer singing and dancing snowmen." She also writes that she hopes that UF is getting a new mechanical engineering building.

DAUS STUDENBERT (BSME 2000)
Studenbert is an applications engineer at Ludeca. He recently got engaged.

In Memorium

O. FRANK BENNETT, BSME 1958, Valrico FL. Our condolences to his wife, Wanda.

Outstanding Alumni Awards 2009

The Annual MAE Outstanding Alumni Awards were given out on April 17, 2009, at the University of Florida Hilton. Following is a list of this year's award recipients and their accomplishments.

WILLIAM BIERBOWER
Bierbower Enterprises LLC.
For outstanding entrepreneurism as founder of three successful companies and holder of many successful patents and trademarks.

PROF. CHRISTINA BOLEBAUM
University of Buffalo (currently at NSF)
For research excellence and innovation in Multidisciplinary Design Optimization and outstanding educational and professional leadership.

DR. STEVEN BUTLER, Executive Director, US Air Force Materiel Command, system development, technical leadership, and developing the scientific and engineering workforce in support of the Department of Defense.

A. E. "BUDDY" HOLMES (BASE 1963)
Gulfstream Aerospace Co. (retired)
For outstanding career contributions to aerodynamic design and marketing of Military, Business and Special Mission Aircraft.

MAJOR GENERAL JEFFREY RIEMER
VP, InDyne Inc. (retired)
For sustained outstanding leadership and service to our nation with enduring contributions in acquisition, test & evaluation, and defense policy

DR. MARK SWINSON
Chief Scientist, USASMDC/ARSTRAT
For outstanding technical and program leadership within the Department of Defense in the areas of mechanical engineering and information technology for national security applications.

Acknowledgements

Managing Editor
Christine Schmitz

Contributing Editors
Brandon Krick
Janice C. Kaplan

Design
Christina L. Cozart

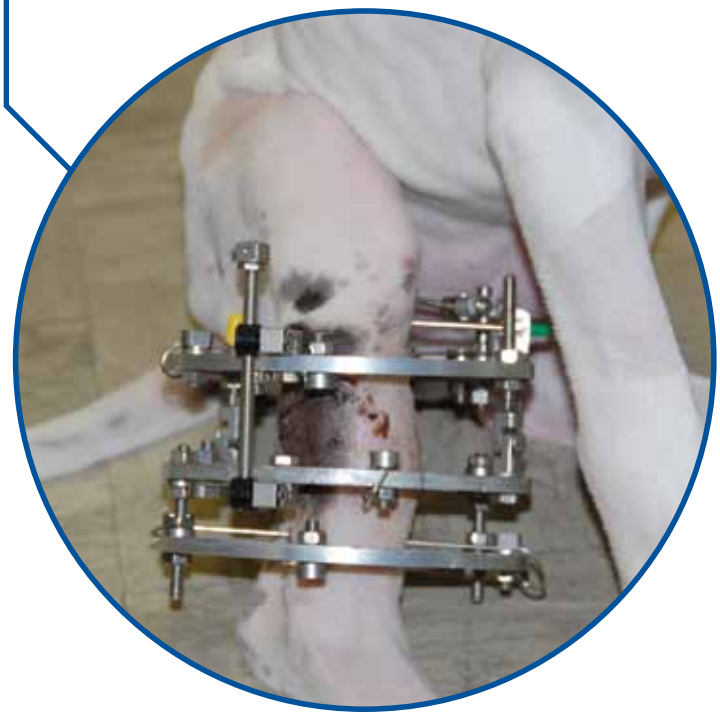
S. Balachandar
Chair &
William F. Powers Professor
bala1s@ufl.edu

Department of Mechanical & Aerospace Engineering
University of Florida
231 MAE-A, P.O. Box 116250
Gainesville, FL 32611-6250

P. 352.392.0961
www.mae.ufl.edu

Departmental Happenings

MAE student Diego Trujillo welcoming Abner and his owner, Jessica Robertson (a 3rd year Vet Med student), to class.



Abner's right hind limb with the external fracture correction frame applied.

Professor Scott Banks introduced bone fracture healing to his EML 5598 Orthopaedic Biomechanics course by inviting Professor Dan D. Lewis from the UF Vet School to visit. The students were impressed by Lewis, who is renowned for doing limb deformity correction in animals, but were even more impressed with one of his patients, Abner, a 4-month old Great Dane pup whose tibia was bent from a pervious fracture that healed malaligned.

Professor Scott Banks took his EML 5598 Orthopaedic Biomechanics class to the Human Motion Laboratory at the Orthopaedic and Sports Medicine Institute. Students were able to in practice how photogrammetric techniques and multi-axis load cells are used to quantify human movement. Since Jason Bouwkamp a grad student in the Institute of Health Professions, practices various forms of martial arts, he was asked to walk across the force platforms on his hands, in addition to the more traditional ambulation technique.

Staff News

JEFF STUDSTILL, Lab Manager, received the Division Three 2008-2009 UF Superior Accomplishment Award, a university-wide award.

JAN MACHNIK, Grants Specialist in the MAE department received her "20 Years of Service Award" and an "Outstanding Staff Award" at 2009 Outstanding Alumni and Awards Banquet.

JAN ROCKEY , program assistant, received a 2009 Outstanding Staff Award.


1

2


3

1. Jeff Studsill is pictured on the far left, along with the other Superior Accomplish Award winners from various UF departments.
2. Jan Machnik
3. Jan Rockey

New MAE Web site

MAE is pleased to introduce the new and updated website. Please visit us at www.mae.ufl.edu. While you are on-line, please take the time to let us know what is new with you too. You can find our new on-line alumni update form at www.mae.ufl.edu/alumni/request/index.php. Please use the password: UF-MAE.

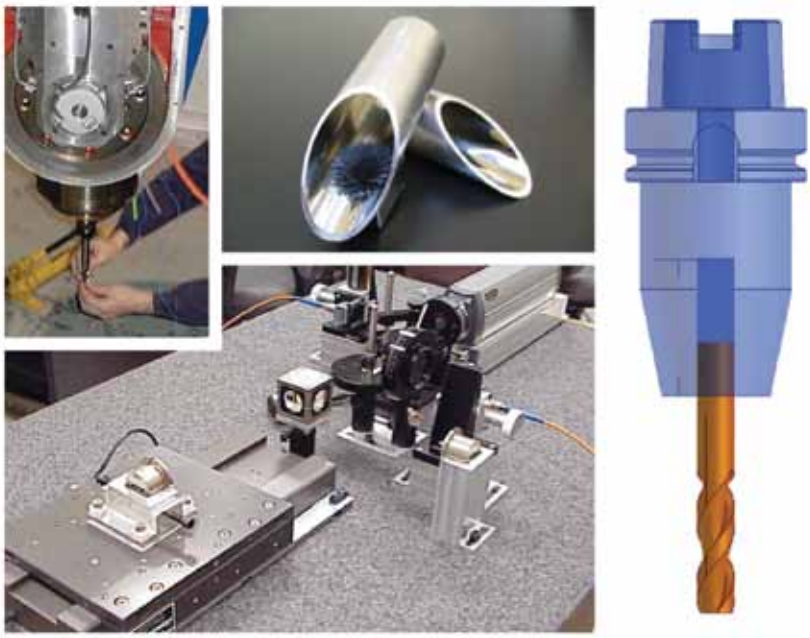
UF UNIVERSITY of FLORIDA

Department of
Mechanical & Aerospace Engineering
231 MAE-A
P.O. Box 116250
Gainesville, FL 32611-6250

Non-Profit Org
US Postage
P A I D
Gainesville, FL
Permit No. 94

WHAT'S NEW?

Advanced Manufacturing Certificate Program



The University of Florida's College of Engineering is offering a new Advanced Manufacturing Certificate through the department of Mechanical and Aerospace Engineering.

This certificate program is designed for manufacturing professionals and students interested in modern advanced manufacturing techniques. The one-year online program is composed of a three course (9 graduate credit hours) sequence offered annually over the fall, spring and summer sessions.

The courses will cover traditional manufacturing processes, such as forming, machining, welding; nontraditional manufacturing processes; and related engineering topics such as linear vibrations, modal analysis, and linear controls.

With complete online delivery of all course materials and exams proctored at participants' work places, MAE is at the forefront of helping professionals continue their engineering education.

Contact Information

For general information on the Advanced Manufacturing Certificate program or to enroll: Ruth Bryant, UF EDGE 352.392.9670 rbrya@eng.ufl.edu.

For technical questions on topics and course curriculum: Dr. Tony Schmitz, Director, Machine Tool Research Center 352.392.8909 tschmitz@ufl.edu.

MTRC
MACHINE TOOL RESEARCH CENTER