

October 26, 2012

## ME Alumni to be honored during 2012 Homecoming

At the 2012 Honors and Awards Ceremony, two distinguished mechanical engineering alumni will be recognized by the Iowa State University Alumni Association and the College of Engineering. The event, which is celebrating its 81st year, is open to the public and will be held at Benton Auditorium in the Scheman Building on Friday, October 26, at 1:30 p.m.

**Leia Guccione** is the recipient of the Outstanding Young Alumni Award by the ISU Alumni Association. During her time at Iowa State, she was one of the most involved, engaged, and accomplished students on campus, so it is no surprise she has become one of ISU's most involved, engaged, and accomplished young alumni. Guccione graduated with a double major in mechanical engineering and political science from Iowa State in 2004.



Guccione

As a naval nuclear engineer on the U.S.S. RONALD REAGAN, Lieutenant Guccione led a diverse 40-person organization of technicians and supervisors responsible for the ship's main machinery room and associated main propulsion turbines, electrical generating turbines, pure water distilling units, air compressors, and associated pumps and support equipment. ([Read Lt. Guccione's story](#))

**Sadanand D. Joshi** is the recipient of the Anson Marston Medal by the College of Engineering in recognition of his outstanding achievement in advancing engineering technology. Dr. Joshi received his Ph.D. in mechanical engineering from Iowa State in 1978.



Joshi

Dr. Joshi, president and founder of Joshi Technologies International, Inc. (JTI), is widely known for his contributions to developing horizontal well technology to produce crude oil and natural gas. Author of the best-selling book *Horizontal Well Technology*, which was published in 1991, Joshi also co-authored *Geological Aspects of Horizontal Drilling* with R. D. Fritz and M. K. Horn, published that same year. He has had nearly 50 technical papers published with the Society of Petroleum Engineers (SPE), American Society of Mechanical Engineers (ASME), Petroleum Society of Canadian Institute of Mining, and other industry organizations. ([Read Dr. Joshi's story](#))

## Avendano presents at MAES Symposium

**Alex Avendano**, junior in mechanical engineering, presented a research poster at the MAES Symposium 2012, held October 10-13 in Las Vegas, NV. Avendano presented a poster on a research project he completed at Iowa State University as part of the 2010 SPEED Program. The research, "Surface Coverage of Double Thiolated Molecules on Microsurfaces for Microcantilever Sensors," was completed at the mechanical engineering department under the guidance of **Pranav Shrotriya**, associate professor of mechanical



Avendano

## Researchers double down on heat to break up cellulose, produce fuels and power



Iowa State University engineers Song-Charrng Kong, left, and Nicholas Creager are studying a new bio-oil gasifier. Kong is holding samples of bio-oil that can be vaporized by the machine. Creager is holding the system's reactor, which can operate at temperatures exceeding 1,800 degrees Fahrenheit. Photo by Bob Elbert.

Iowa State's new bio-oil gasifier uses heat and pressure to convert bio-oil into a synthesis gas that can be used to make transportation and boiler fuels. The gasifier was built as part of a two-year, nearly \$1 million grant from the U.S. Department of Energy. Another three-year, \$450,000 grant from the [Iowa Energy Center](#) will allow researchers to study and refine bio-oil gasification.

**Song-Charrng Kong**, associate professor of mechanical engineering who's leading the latter project, will build a computer simulation model of bio-oil gasification. The model will take into account changes in temperature, pressure and biomass. It will allow researchers to understand, predict and ultimately improve the gasification process.

"The physics and chemistry will be behind all these models and images," Kong said. "This is a very new area to study. We can use these models as a tool to understand what will happen as this technology is scaled up."

"We hope to be able to use cellulosic biomass as opposed to using corn grain for the production of fuels," said **Robert C. Brown**, the director of Iowa State's Bioeconomy Institute, an Anson Marston Distinguished Professor in Engineering and the Gary and Donna Hoover Chair in Mechanical Engineering. "This helps us move toward cellulosic biofuels." ([Full story](#))

## Levitas' research featured in prominent journals

engineering.

"The conference experience in general was amazing," said Avendano. "We had the opportunity to network with students from all over the country, participate in career development workshops hosted by companies, attend formal lunches and dinners, and also participate in the career fair."

## Recent grant award announcements

**PI: Gap-Yong Kim**

**Title:** "Novel Manufacturing of Bio-inspired Metal Matrix Composites by Semisolid Forming-joining"

**Award Amount:** \$6,600

**Awarding Agency:** National Science Foundation (NSF) Research Experiences for Undergraduates (REU)



Kim

This supplementary award allows for an undergraduate student to be hired to participate in ongoing NSF project titled, "Novel Manufacturing of Bio-inspired Metal Matrix Composites by Semisolid Forming-joining". The student will learn about metal matrix composites and participate in the fabrication and testing of synthesized composites.

## Three ME faculty join research effort

Three mechanical engineering faculty members have received funding for the Iowa State University Health Research Initiative on Infectious Diseases (ISU-HRI-ID).



Montazami

Hashemi

Chandra

Professor **Abhijit Chandra**, Assistant Professor **Reza Montazami**, and Assistant Professor and William March Scholar **Nastaran Hashemi** received \$150,000 funding for their project "HRI-1 The Development of Novel Strategies for the Efficient Diagnosis, Prevention, Control, and Treatment of Infectious Diseases".

The primary objective of ISU-HRI-ID is to establish a university-wide Infectious Diseases (ID)- Consortium that can (1) build a broader and highly integrated network of interdisciplinary collaborations, (2) strengthen and facilitate expansion of existing research programs, (3) assemble new research teams and crossfertilize groups from different disciplines, and (4) create synergy among investigators doing research in infectious diseases of humans, animals and plants. As a major part of this effort, the Consortium will recruit renowned investigators across the country as key, strategic partners in order to strengthen ID research at ISU. The ultimate goal is to build a world-class Infectious Diseases Research Institute (IDRI) at ISU in 5-10 years. ([More information on the initiative](#))

## Denise Wright leaving the department

After five and a half years with the ME Department and seven years with the university, administrative specialist **Denise Wright** is leaving and making an exciting move out west to Seattle.

Of her time in the department, Denise said: "I have appreciated getting to know all of the faculty and staff, and I've enjoyed all of the humor and kindness of my coworkers. This truly has been a positive work experience for me, and I feel I've grown professionally working with such wonderful mentors and colleagues."

A reception will be held in her honor on November 2 from 10 a.m. to noon in 2004 Black. Best wishes to Denise as she moves on to a bright future in Seattle!

A recent paper on virtual melting by **Valery Levitas**, Schafer 2050 Challenge Professor and aerospace engineering and mechanical engineering faculty member, has been featured in *Nature Materials*. The paper, by Levitas and Ramon Ravelo, a collaborator from Los Alamos National Laboratory, "Virtual melting as a new mechanism of stress relaxation under high strain rate loading," describes a new theory of short-term melting of materials followed by immediate recrystallization. ([Full story](#))



Levitas

Most recently, Levitas' paper "Shear-Induced Phase Transition of Nanocrystalline Hexagonal Boron Nitride to Wurtzitic Structure at Room Temperature and Low Pressure" was accepted to the Proceedings of the National Academy of Sciences of the United States of America.

## Reflections on Interim Chair Ted Heindel

As the new department chair for mechanical engineering, **Caroline Hayes**, settles into her new position, the department reflects on the last three years under the leadership of Interim Department Chair **Ted Heindel**. During his time as interim chair, he did his part to help the department grow and acquire many new faculty and staff hires.



Heindel

Then College of Engineering Dean, Senior Vice President & Provost **Jonathan Wickert**, in announcing the appointment, expressed appreciation for Heindel.

"Ted has done an outstanding job," Wickert said. "Under his leadership, the department has made important new hires, built collaborations across the college, and strengthened relationships with alumni and corporations."

Heindel is staying with ME as the Bergles Professor of Thermal Science, and will remain as one of the many great assets of the department.

Below are messages of gratitude from ME faculty and staff:

*"Thank you Ted for your great leadership and friendship."*

*"Thank you, Ted! We greatly appreciate your leadership as the Interim Chair and support for the department."*

*"The role of the department chair is a crucial one, thank you for caring enough to take this on for 3+ years."*

*"Ted showed a high level of commitment to the growth of the department during his tenure as chair - by adding several faculty and staff, and aligning decisions with the strategic plan, his leadership has put the department in a very good position for the future. His time, effort and leadership are tremendously appreciated. We are glad to continue to count him as our colleague in the department."*

*"Thank you for your gracious leadership and best wishes for a productive leave."*

*"Thank you Ted for your steady leadership: never overwhelming, but always encouraging, timely and resourceful."*

*"Ted, Thanks for your hard work in moving our department forward as interim chair!"*

*"Ted was far more than an interim chair in my estimation—he held his leadership position longer than the last two Deans of the College!"*

*"Thanks Ted for all your hard work in keeping the ship going straight in troubled waters."*

## Upcoming events

**October 30** – [Seminar: Probabilistic Methods in Cancer Biology](#)

**November 6** - [Seminar: New Tools for Bayesian Inference in Complex Physical Systems](#)

**November 8** - [Learning to Think Like Scientists: Does Our Future Depend on It?](#)

**November 9** - [VRAC Tour](#)

**November 13** - [Seminar: Challenges and Opportunities in Design of Large-Scale Complex Engineered Systems](#)

*"Thank you, Ted, for many years of support and mentorship."*

*"Thanks for all your hard work in making the ME department a better place to work."*

*"Thank you, Ted, for your leadership and efforts to improve our department."*

*"Ted: Thanks for your great service to the department as interim chair. Wish you all the best in your future endeavors."*

Department of Mechanical Engineering  
2025 Black Engineering Building, Ames, IA 50011  
515 294-1423, [isume@iastate.edu](mailto:isume@iastate.edu)

Do you have department news you'd like to share?  
Please e-mail news items for InCYde Mechanical Engineering to [Alex Rausch](#).