InCYde MECHANICAL ENGINEERING
IOWA STATE UNIVERSITY
Department of Mechanical Engineering

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Levitas receives second Humboldt Fellowship


Levitas

Valery Levitas, Schafer 2050 Challenge Professor and faculty member in both aerospace and mechanical engineering, has received an Alexander von Humboldt Foundation Fellowship for alumni in recognition of his research the field of mechanics of materials.

"Advancing modeling of mechanics is especially important for nano-objects, like nanowires, nanoparticles, and nanofilms, as well as for interfaces between nanotwins in bulk materials," explains Levitas. These sorts of nano-objects can help researchers create new materials and devices with broad applications. (Full story)

Morrow leads design sessions at NSF Grantees conference


Morrow

Assistant Professor in mechanical engineering and economics **W. Ross Morrow** co-organized and moderated two panel sessions concerning design at NSF's recent CMMI Grantee's conference in Boston, MA. One session, "Design's Role in the US Economy," dealt with the value of design to US businesses and the connections between a resurgence in the manufacturing base and strengthened design capability. Another session, "Executing and Implementing Design Research to Strengthen the US Economy," concerned design research, design education, and industrial outreach.

Panelists included Kate Whitefoot (National Academy of Engineering), Soren Petersen (Ingomar & Ingomar Consultants), Willy Shih (Harvard Business School), Wei Chen (Northwestern), Timothy Simpson (Penn State), and Steve Eppinger (MIT). These sessions were invited by Christina Bloebaum, currently the director of NSF's EDI program. Dr. Bloebaum is starting at Iowa State in the Fall of 2012 in aerospace engineering.

Recent Grant Award Announcements


Brown

PI: Robert C. Brown
Title: "Production of Activated Carbon from Fast Pyrolysis Biochar"
Award Amount: $100,773
Awarding Agency: Iowa Energy Center

The goal of this project is to evaluate the use of biochar from biomass fast pyrolysis to produce activated carbon. This activated carbon will be used to 1) remove impurities from the water soluble fraction from biomass fast pyrolysis, thus improving its suitability as a fermentation medium for ethanol production; and 2) clean the synthesis gas produced in the fast pyrolysis of biomass. Different chemical and physical treatments of the biochar will be tested in order to optimize the performance of the activated carbon.

PI: Robert C. Brown
Title: "Algae Cultivation and Pyrolytic Recovery"

Kirpes named 2012 Tau Beta Pi Laureate


Kirpes

Each year, graduates of the College of Engineering leave with countless academic and research experiences that help propel them into the next chapter of their lives. **Carl Kirpes**, senior in mechanical engineering and industrial and manufacturing systems engineering, will have just that when he graduates in August −leaving with not only a diploma, but with the honor of being selected as a Tau Beta Pi Laureate.

Kirpes is one of five students in the nation to be named a 2012 Tau Beta Pi Laureate, an honor bestowed on only 83 students since 1982. Kirpes plans to complete his coursework in August of 2012, earning degrees in both mechanical engineering and industrial and manufacturing systems engineering, while also graduating in the top two percent of his engineering class.

Upon graduation, Kirpes plans to move to Kansas City, Missouri, where he will begin work for GENESYS Systems Integrator. Pursuing a master's degree in systems engineering is also on his agenda. He plans to take about six credits a semester at Iowa State, beginning this fall, to help him stay connected with the institution he feels has given much to him over the past four years. Kirpes will be attending the 107th annual Tau Beta Pi Association Convention this September in Lexington, Kentucky to be recognized for this achievement with a plaque and $2,500. (Full story)

ASME ICNMM 2012 Outstanding Researcher Award given to Attinger


Daniel Attinger (left) and Dimos Poulikakos (right). Prof. Poulikakos of ETH received the Max Jakob award, the highest award in heat transfer, and was Ph.D. thesis advisor to Attinger.

Daniel Attinger, associate professor in mechanical engineering, was honored with the ASME ICNMM 2012 Outstanding Research Award. Attinger was presented with this award on July 9 at the 10th International Conference on Nanochannels, Microchannels and Minichannels (ICNMM), in Puerto Rico, USA. He received this award in testimony of his outstanding leadership and support of the ten international conferences on nanochannels, micro-channels and minichannels.

Team PrISUm races Hyperion to second place finish at 2012 FSGP and ASC

Award Amount: $95,800
Awarding Agency: Iowa Energy Center

The goal of this project is to develop an innovative integrated system for fuel and valuable chemical production from algae biomass. To accomplish this, algae cultivation and processing systems will be developed. The algae cultivation system being developed is a biofilm-photobioreactor that delivers light and carbon dioxide efficiently to the algae culture while minimizing water usage. The algae processing system will employ thermochemical conversion of algae via fast pyrolysis using catalyst to produce high value chemicals.

PI: Xinwei Wang
Title: "Ultra-high Thermal Conductivity of Spider Silk: Protein Function Study with Controlled Structure Change and Comparison"
Award Amount: $150,000
Awarding Agency: United States Department of Defense Army Research Office


Wang

This goal of this project is to develop a novel technology to characterize the thermal conductivity in the radial (cross-plane) direction of spider silks, and unravel the mechanisms of thermal transport in silks via controlled protein structure variation and comparison against silkworm silks.

Search begins for next Dean of the College of Engineering

The search for the next dean of the College of Engineering is under way. Executive Vice President and Provost **Elizabeth Hoffman** identified a 20-member search committee to seek a successor to **Jonathan Wickert**, who will become senior vice president and provost on July 30.

Of the 20-member search committee, three are associated with the Department of Mechanical Engineering: **Sandy Bremer**, teaching lab coordinator; **Rachel Dudley**, graduate student; and **Song-Charng Kong**, associate professor. (Full story)

ME alum turns 100

Robert B. Jenkins will turn 100 years old on July 30. Mr. Jenkins grew up on a farm near Boone and Ames, and graduated from Iowa State University with a degree in mechanical engineering in 1935. He went on to work for Koehring. Mr. Jenkins now resides in Jacksonville, FL.

Upcoming Events

July 30-August 3– ISU/Putnam Museum Engineering Camps
August 14 – Biopolymers and Biocomposites Workshop
August 17 – Welcome Back Picnic held by MEGSO (Mechanical Engineering Graduate Student Organization) and the Graduate Programs Office, Howe Hall Atrium, 5-7 p.m.
August 20 – Fall Semester Begins
August 20 – Mechanical Engineering Departmental Picnic, Moore Memorial Park, 3050 Northridge Parkway, 7 p.m.


Hyperion and Team PrISUm's official race crew photo for the 2012 American Solar Challenge competition.

Team PrISUm arrived at the Monticello Motor Club in Monticello, NY on July 6. After four days of registration and scrutineering, Team PrISUm was ready for the 2012 Formula Sun Grand Prix. The race also acted as a qualifier for the American Solar Challenge. To qualify, teams were required to complete 105 laps in a single day or 160 laps in two consecutive days. The lap length was 1.6 miles. Additionally, each participating driver needed to complete 25 laps. Drivers Evan Stumpges, Cory Anderson, John O'Grady, and Dakota Morgan all successfully qualified.

Team PrISUm and Hyperion completed 125 laps on the first day, July 10, easily qualifying them for the American Solar Challenge. It was clear to Team PrISUm that they were performing exceptionally, and their biggest competition would be the University of Michigan. Over the next two days, Team PrISUm completed 146 and 155 laps, making their total lap count 426. Hyperion raced a total of 681.6 miles, with an average speed of 28.4 MPH. This placed them in second behind the University of Michigan, who finished with 449 laps. Iowa State earned the fastest lap with a time of 2:18.

With the Formula Sun Grand Prix completed, Team PrISUm set their sights on the American Solar Challenge, an eight day, 1,652.8 mile race from Rochester, NY to St. Paul, MN. Team PrISUm was able to hold second place on the first stage of the race, which spanned from Rochester, NY to Erie, PA. During the second stage, Team PrISUm faced heavy thunderstorms, radio issues, and a slight accident which set them behind. They finished fifth in the second stage from Erie to Ann Arbor, MI, putting them in fourth place overall. In the third stage, Team PrISUm travelled from Ann Arbor to Normal, IL, and was able to make up time, finishing second for the stage and propelling them back to second place overall. The fourth stage from Normal to La Crosse, WI, caused some trouble with cloudy weather and a broken inverter. Iowa State placed fourth in the fourth stage. The final stage consisted of a 150 mile stretch from LaCrosse to St. Paul, MN. Team PrISUm originally experienced rain early on, but when the sun came out later they were able to hit their top speed of the race: 65 MPH. Iowa State finished the fifth and final stage in fourth place.

Team PrISUm was one of four teams that completed the 1,652.8 mile race purely on solar polar, without having to trailer. The team came in second place overall, behind the University of Michigan. Hyperion received the best electrical and mechanical system design awards from ASC tech inspectors. Team PrISUm had its best racing season in its 23 year history. (Team PrISUm Site)

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