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5-20-2011

## CEAS e-news 05.20.2011

College of Engineering and Applied Sciences

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Western Michigan University

# College of Engineering and Applied Sciences

Engagement ~ Leadership ~ Globalization ~ Innovation

WMU Engineers  
Help Shape  
the  
Future

May 20, 2011

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[www.wmich.edu/engineer/news.htm](http://www.wmich.edu/engineer/news.htm)

"Engineering is the science of economy, of conserving the energy, kinetic and potential, provided and stored up by nature for the use of man. It is the business of engineering to utilize this energy to the best advantage, so that there may be the least possible waste."

~ William A. Smith  
1908

## CEAS News

### II-VI Foundation Provides Funding for Research Project For CEAS Manufacturing Research Center

The mission of the II-VI (two-six) Foundation is to "encourage and enable students to pursue careers in engineering, science, and mathematics." This week they did just that by providing \$91,122 in funding support to Western Michigan University and the Manufacturing Research Center for the *Micro Laser Assisted Machining of Infrared Optical Materials* project. **Dr. Carl J. Johnson**, chair of the II-VI Foundation, was in attendance at a signing ceremony, which outlined the gift. Also in attendance were Dean, **Anthony Vizzini**, Chair of Manufacturing Engineering, **Dr. John Patten**, and Associate Professor in Mechanical & Aeronautical Engineering, **Dr. Muralidhar Ghantasala**, as well as students **Dionisio Del Orbe Henriquez** and **Deepak Ravindra**.

Dr. Johnson has served as a director of II-VI Incorporated since 1971 and was its co-founder. He and his wife also established the II-VI Foundation. The company, which includes industrial manufacturing, military and aerospace, electronics and telecommunications, and thermo-electronics applications, has a diversified customer base to which II-VI develops, manufactures, and markets



Above back, L-R: Dr. Muralidhar Ghantasala, Dr. John Patten, and Dean Tony Vizzini. Front: Dionisio Del Orbe Henriquez, Dr. Carl J. Johnson, & Deepak Ravindra, who is a MAE PhD candidate.

its products. Dr. Johnson retired in 2010 but continues to serve as chairman of the board (in a non-executive capacity). His scientific knowledge along with his technological vision and operational know-how continues to provide strategic direction to the company and the board of directors. Dr. Patten will directly manage this project and supervise the work of the students and will be assisted by his colleague,

Dr. Muralidhar Ghantasala, who contributes to the material analysis and characterization research work. Concurrent and complementary work on analyzing the  $\mu$ -LAM process is being conducted in Drs. Ghantasala and Patten's laboratories in collaboration with Argonne National Laboratory as part of one larger research program effort. Semiconductors and advanced ceramics, such as silicon and silicon carbide are hard and brittle materials prone to fracture damage during manufacturing processing, which makes fabricating precision components (microelectronics and optics) especially challenging. Micro  $\mu$ -Lam aims to address this fundamental problem by heating and thermal softening these hard and brittle materials.

Two potential follow-up projects are envisioned based on the success of the current proposed work. First would be to evaluate and optimize the wavelength and power requirements, including pulsed lasers, for performing micro laser assisted machining for a wider range of IR materials. Second would be to extend the micro laser assisted machining process to other semiconductors and ceramics of interest to industry and eventual commercialization of the technology.

### Tau Alpha Pi Students Inducted

Five members of the Delta Michigan Chapter of Tau Alpha Pi the national honor society for engineering technology, were inducted to the society in a formal ceremony on April 22, 2011. **Dr. Alamgir Choudhury** and **Dr. Sam Ramrattan**, faculty advisers for Tau Alpha Pi and faculty members in the Department of Industrial and Manufacturing Engineering (IME), introduced the new members: **Cody R. Boyne**, president; **Jian He**, vice president; **Nicholas Dixon**, secretary; **Michael E. Biro**; and **Brian Shea**. The formal ceremony was held in Bernhard Center and was attended by the **Dr. Paul Engelmann**, IME department chair; **Dr. Anthony Vizzini**, dean of College of Engineering and Applied Sciences; and several IME faculty members. The ceremony included a ritual of oath, awarding of certificates, and a dinner for all those in attendance. The Delta Michigan Chapter of Tau Alpha Pi was founded at Western Michigan University in 1993. The society recognizes the top 5% of an institutions



Tau Alpha Pi advisers and inductees at the formal ceremony.. From left are **Dr. Alamgir Choudhury**, faculty adviser; **Nicholas Dixon**, secretary, **Brian Shea**; **Jian He**, vice president; **Michael E. Biro**; **Cody R. Boyne**, president; and **Dr. Sam Ramrattan**.

student body. The purpose of the society is to recognize and inspire scholarly excellence, fine character traits, and leadership qualities. The society rewards selected scholars for past achievements and accomplishments, while encouraging a lifetime of commitment to learning and scholarship. Currently there are over 95 chapters of the society nationally.

### Meet the New Staff Member Allison Green Research & Program Officer

#### Degrees:

B.A., University of Florida  
J.D., Nova Southeastern University



Allison brings to her role as a Research and Program Officer a broad array of skills in business, education, mediation and negotiation, and marketing. She has a background in contracts administration and recently worked as an independent contractor, project manager, legal affairs officer and entrepreneur.

Please contact Allison for any proposal-related needs. Office hours and contact information are provided below.

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269.387.8376 || Walwood  
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E210 Parkview – W 9:00 am – 4:00 pm  
E210 Parkview – H 9:00 am – 4:00 pm



## Transporting the 3.8 million-pound Sam White Bridge

"Today technology is so advanced that a bridge can be built offsite and be moved to its final location within a couple hours reducing months of delays", Dr. Attanayake stated after coming back from Utah where he was able to get the first-hand experience of moving a bridge with self-propelled modular transporters (SPMTs). "It was one of the greatest moments in my life when I had the opportunity to witness the entire operation of moving the 354-foot, 3.8 million-pound Sam White Bridge, which is the longest two-span bridge ever moved in the Western Hemisphere, using SPMTs," he said. Utah DOT started closing the freeway, I-15, traffic in both directions on Saturday March 26 at about 9:30 p.m. and started moving the bridge at 11 p.m. The contractors were able to complete the bridge move by 4 a.m. and then opened the freeway on Sunday March 27 around 7 a.m. The experience and the contacts with Federal Highway Administration officials, DOT officials, engineers, and contractors is vital at this time as the CCE researchers are working on a Michigan DOT funded project to develop short-and long-term plans for Michigan to implement such technologies. Dr. Attanayake acknowledges UDOT officials and staff, contractors, and officials from agencies such as FHWA who provided access to the bridge sites, workshops/meetings, and other events to get a wealth of information and knowledge on the latest technologies in bridge engineering. Further, he applauds UDOT's efforts with their outreach activities to educate the public with all the activities and allowing them to witness these great marvels of engineering to appreciate what contributions engineers can make to provide a safe and uninterrupted commute.



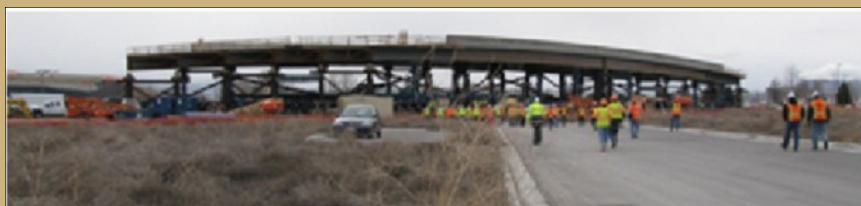
Above: Bridge supported by 4 SPMTs



Above: A self-propelled modular transporter (SPMT)

## CEAS Paper Students Attend 2011 TAPPI Summit and Being Well Prepared Resulted in Summer Job Offers

Earlier this year, students supported by PTF and PCI were sent to attend the TAPPI annual Student Summit, hosted by Domtar, and their Kingsport, TN mill. The first session kicked-off with a keynote on "New Directions," delivered by Mike Edwards, Domtar Group Senior VP, Pulp and Paper, and was followed by three days of presentations on industry-insider tips, new technologies and production advancements, networking opportunities, TAPPI division updates, and nationwide student socializing events. Industry recruiters also participated and interviewed our WMU students for summer internship and co-op opportunities. Feedback provided to WMU Student Recruiter Perk was excellent--our students are very well prepared and were extremely professional and polished in their interviews! Several were offered summer positions as a result.



Above: Bridge constructed off-site



Above and Below: Bridge being moved to its final location

