Engineering News

Kazuo Inamori School of Engineering
Alfred University

Volume 12, Number 1 February 2011

Upcoming Events

February 20-26

National Engineering Week

On campus engineering challenges and events sponsored by students for students!

March 26 & April 9

AU Purple and Gold Days for Accepted Students

Tour the campus and meet future classmates and faculty. Register at www.alfred.edu/congrats

April 23-25

AU's Spring Family Weekend

Annual Hot Dog Day is Saturday, April 24 - parade, engineering competitions and fun for all!

Engineering Programs for High School Students, Summer 2011

June 26-30

Summer Institute 2011: Engineering the Elements - Polymers and Electronic Ceramics*

Students entering grades 11-12 participate in hands-on lab experiences focusing on polymers and electronic ceramics.

July 10-14

Computer Engineering Camp*

Computing experiences for both basic and advanced students aged 12-17. Students learn at their own pace, each at their own computer station, with an emphasis on having fun.

July 24-28

Robotics Engineering Camp*

The VEX Robotics System-based program offers high school students entering grades 10-12 an exciting platform for learning about areas rich with career opportunities spanning science, technology, engineering and math.

For complete information on registration, go to www.alfred.edu/summer/hs

Renewable Energy Engineering Announced

Renewable. Alternative. Clean. Green. Sustainable - Whatever you choose to call it, new energy sources are going to be a big part of our future, and engineers are needed to help the industry grow.

Fossil fuels heat our homes, fuel transportation, and power today's industry, but the world's supply is limited. Business and government alike are recognizing the need to develop new and renewable energy sources that are both clean and economical.

Alfred University's Inamori School of Engineering is launching a new program to educate the kind of engineers needed to secure our energy future. SOE will add a new Renewable Energy Engineering minor in Fall 2011 and is applying to the New York State Education Department for permission to offer a new major (tentatively available Fall 2012).

The new minor will require 15 credit hours of coursework selected from classes like "Introduction to Renewable Energy," "Wind Energy," and "Solar Energy." Available to all engineering majors, the minor should be a powerful combination with mechanical engineering or materials science and engineering majors.

The Renewable Energy Engineering major will provide a solid foundation in mechanical and electrical engineering with an emphasis on producing, transporting, and using energy to ensure a clean and sustainable future. Undecided students entering in Fall 2011 will be able to transfer seamlessly to the new major when it's approved.

Project-based learning enhances 1st-year program

In Fall 2010, SOE launched a new first-year engineering curriculum. Based on engineering education research, the new curriculum encourages students to learn more by tackling complex problems rather than memorizing small pieces of information in discrete classes.

ENGR 101 "Introduction to Engineering", was transformed to include project-based learning. Students learned fundamental engineering concepts by taking on some of the world's biggest engineering challenges, using their growing engineering knowledge to propose new solutions to the world's biggest problems - how to provide clean water and affordable energy to the world's population and how to prevent disease and terrorism. Projects ranged from efficient fuel injectors to biofuel processing plants to new sensors that detect radioactive materials in shipping containers.

New for Spring 2011, first-year engineering students are taking the "Engineering Explorations" laboratories. Developed in response to recent graduates' feedback, Engineering Explorations were developed to help students understand what different engineering majors really do earlier in their academic careers. Each student selects two of the six labs based on their interest: biomaterials, ceramic engineering, electrical engineering, glass, materials science, and mechanical engineering. While providing students with hands-on skills, the classes should help students select the major that is right for them.

On Assignment Co-op: Steve Barton at O-I

Stephen Barton (3rd year CE) recently completed a co-op assignment at the headquarters of glass container manufacturer Owens-Illinois (O-I) at Perrysburg, Ohio. Barton worked in R&D for the glass science department. Over his 7-month co-op program, Barton worked on several projects and also traveled to O-I plants in the Perrysburg area to see the glass container manufacturing process in action.

For Barton, seeing the plants was "eye-opening with the quantity, efficiency, and speed at which this process is done." A typical 12 oz beer bottle line can produce around 600 bottles a minute and most plants have 2-4 lines.

A typical working day in R&D would include reviewing collected data and results, making 1-3 glass melts, analyzing any new data from previous glass melts, searching and looking at literature for new ideas, and working on any random small projects, problems, or house-keeping issues that arise throughout the course of a day. A typical day might also include a meeting to discuss results and plan new directions.

Barton reported that co-op "has been a great and priceless experience for me" and went on "with everything that goes on in my typical day it has made me more organized, efficient, and better at time management. It has also shown me how to better judge a priority list of what is important, urgent, or can be put on hold for a few days. I have also learned how important some of the smallest details can be and to always record everything that happens and/or is done ... I also learned to communicate more efficiently with people in person and through email, and how to work better in groups and with other people to achieve a common goal."

On a personal level, Barton states, "I am very thankful and can't say enough good things about my experience, opportunity, and people at O-I... [I] would strongly recommend and encourage students to take advantage of co-op and internship opportunities."

He also reports that having Chicago, Cincinnati, Cleveland, and Detroit within reach for weekend getaways was a definite plus!

Barton's typical day - examining samples from the line simulator, checking for glass stress, microscopic analysis for flaws - as well as batching, preparing samples and analysis!

Larcheveque, Fox win honors for Outstanding Co-ops

Trevor Larcheveque (SR ME) and Austin Fox (SR CE) were recognized for outstanding performance in their Co-op experiences at the recent John F. McMahon Award Lecture, November 4, 2010.

Larcheveque, at left, received the 2010 Robert R. McComsey Career Development Center Outstanding EE/ME Co-op Award. Larcheveque was a Co-op engineer in the engineering department at Saint-Gobain containers, Muncie, IN, June–December 2009. His "job performance was outstanding in every aspect" according to George Heller, Vice President, Engineering and Asset Reliability, who continued, "[he was] an important contributor to the success of two very large furnace rebuild projects in Ruston, LA, and Sapulpa, OK."

Fox, at right, received the 2010 McMahon Achievement Award and was honored for outstanding performance in his Co-op with the Kohler Company (Wisconsin), January-August 2010. Terry Couch, Kohler Engineering Analyst, remarked "[Fox] ... applied his research abilities in advancing our goals. He did not hesitate to make suggestions or offer potential solutions to problems we faced. Austin Fox exemplifies the legacy of John F. McMahon and the academic standards set by Alfred University." The McMahon Award is given for Co-op achievement in Ceramic Engineering or Materials Science.

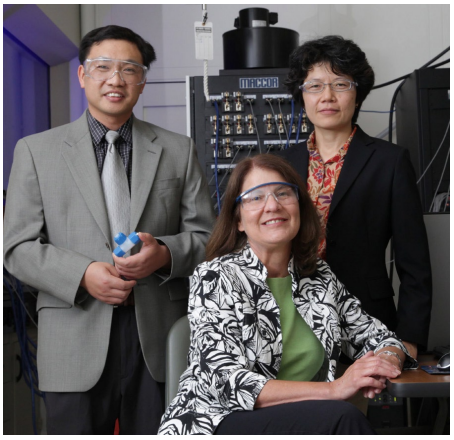
Knox awarded prestigious DOE Fellowship

Victoria Knox, PhD candidate in the Inamori School of Engineering, is among the recipients of the prestigious US Department of Energy Office of Science Graduate Fellowship (DOE SCGF) for 2010-11.

DOE SCGF supports outstanding graduate students in basic research in areas of physics, biology, chemistry, mathematics, engineering, computational sciences, and environmental sciences to encourage the development of the next generation scientific and technical talent in the U.S.

Knox's winning proposal was entitled "The Effects of Dilute Nitrogen Doping in Aurivillius Structured Photocatalysts" - new materials of interest for splitting water into hydrogen and oxygen in a photochemical process for use in solid oxide fuel cell power generation.

Knox (AU BS'08 CE), is a member of the research group of Dr. Scott Misture, Inamori Professor, and is active in the American Ceramic Society as a organizer of the PCSA technical symposia.



Oak Ridge National Laboratory award-winning team (left to right) Chengdu Liang, Nancy Dudney, and Jane Howe.

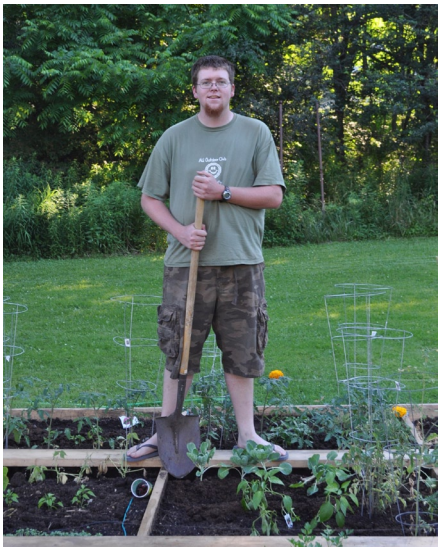
Alumna honored for energy innovation

Jane Howe (PhD CE 2000) is among the 2010 recipients of the annual R&D 100 Awards by R&D Magazine - sometimes referred to as the "Academy Awards of Science."

Howe, a scientist in Oak Ridge National Laboratory (ORNL), is part of the team honored for their development of "Sulfur-Carbon Nanocomposite Cathode Material and Additives for Lithium-Sulfur Batteries." The new technology is an important breakthrough - the lithium-sulfur battery system could improve the energy density of the current (Li-ion) technology by a factor of five or more.

The project was sponsored by ORNL's Laboratory Directed Research and Development Program. Ongoing project support through U.S. Department of Energy Efficiency and Renewable Energy, Vehicle Technologies Program.

Engineer shows "growing" interest in Community gardening



Senior Amos Mainville (ME) spent summer 2010 weekends maintaining and improving the newly established Alfred Society of Horticulture (ASH) community garden. Planned to contain a raised bed system with 14 4x8 ft beds, the garden is envisioned as an organic space for interested community members to grow their choice of crops, plus a shared space and a greenhouse.

Mainville supplying much of the needed labor to create and maintain the initial shared raised beds, construct a 12' x 12' box, split into nine 4' x 4' boxes, and a 4' x 8' box - a little over a third of the approximate 450 square feet planned. Mainville also worked to create a drip irrigation system and a community patio/ gathering space. Cold frames are expected to give an early start in 2011!

Mainville's days during summer 2010 were more typical for an AU engineer - a challenging plant management internship at Advanced Monolithic Ceramics, Olean, NY, that required long shifts. His success in that experience has led to another challenge, a position in Owens-Illinois "Operations Management Development Program" after graduation!

The ASH garden was sponsored by AU food-service provider AVI Fresh, who plan to use produce from the garden in campus food service.

Engineers Week Events at AU

ENGINEERS WEEK® 2011
FEBRUARY 20-26

February 20-26 is National Engineers Week - the Inamori School of Engineering at Alfred University celebrates with special events organized by three student professional organizations and sponsored by the SOE and corporate sponsor Owens-Illinois (O-I).

Monday evening, the crowd at Powell Campus Center's Knight Club will be invited to join in the annual IEEE "Rube Goldberg" competition. This year's objective is to design something that will water a plant. It has to be a minimum of 6 steps, can't be combustible, and has to be smaller than 3x3x3. Creativity starts at 4 with judging at 6. The winner will receive $100!

Tuesday it's the ASME "Junk Yard Wars" - challenging teams to make the best machine from scrap parts - this year competitors must design a moving mechanism on the spot with random materials that can transport an egg 10 feet without the egg breaking.

On Wednesday, select high school juniors from western New York will be invited to participate with AU undergrads in the annual Egg Drop Challenge hosted by SWE and sponsored by O-I. Participants get their materials at 2:30 to create a means to safely land their egg from the upper platform of Davis Memorial Carillon! They launch at 4:15!

The high school guests will be on campus to be recognized as the 2011 Inamori SOE/ Ceramics Association of Western New York (CANY) Scholars - all nominated by their schools for a solid background in math and science, excellence in english and outstanding citizenship in their high school and community. Contact Marlene Wightman, wightman@alfred.edu, for more information on the SOE/CANY Scholars program.

Also on Wednesday night, the Knight Club will be the site for the annual Engineering Week "Picnic" - sponsored by O-I. Plan on joining the party from 6-8!

AU's E-week wraps up on Thursday morning with demonstrations of glass techniques by the Hot Glass Club followed by a special Engineering Seminar presented by O-I scientists.

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