

ENGINEERING News

Kazuo Inamori School of Engineering
Alfred University

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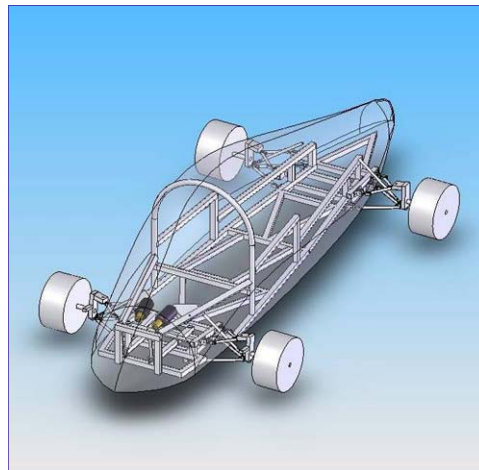
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New! Center for Prototype Manufacturing of Nano-Structured Electroceramics boasts a 30-inch microwave processing chamber with full atmosphere and temperature control systems.
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Del Regno installs new microwave chamber for prototype processing.

Engineers with a need for speed! Extreme Gravity Racing is a team effort



A redesigned chassis, suspension and brake system contained in the streamlined 2007 body design should all contribute to a top speed well over last year's 56 mph!

The push is on to get the latest Alfred University Extreme Gravity Race (XGR) vehicle on the road for 2007 competition. The XGR team has been working on a complete redesign of the 56 mph sixth-place-finisher 2006 racer for even greater success this season.

There will be three races in the 2007 national competition series, all at the end of September. The proposed locations are Los Angeles, Mammoth Lakes, and Lake Tahoe.

With a total budget of around \$8000 (including construction and travel) and only \$2500 raised so far, the team is actively pursuing both corporate and individual sponsors.

The XGR team is advised by Dr. Joseph (Dr. Joe) Rosiczkowski, associate professor of mechanical engineering, and is composed of five AU senior

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Inamori School of Engineering launches new web site for 2007

Alfred University's Inamori School of Engineering web site has a new look for 2007!

Streamlined and consistent navigation complements revised content to help make our web site more useful for visitors and prospective students as well as current students and faculty.

The drop-down menu at the left of each page allows for rapid navigation to information on all degree programs, outreach and faculty information. Each page of revised content is complemented by new images.

Give us a visit - you'll like what you see at engineering.alfred.edu !

The screenshot shows the Alfred University website for the Inamori School of Engineering. The top navigation bar includes links for 'contact', 'news', 'events', and 'sitemap'. Below this is a main menu with categories: 'THE CAMPUS', 'FUTURE STUDENTS', 'STUDENT LIFE', 'ACADEMICS', 'FACULTY & STAFF', and 'ALUMNI & PARENTS'. The main content area features a 'drop-down menu' on the left with options like 'About Us', 'Undergraduate', 'Graduate', 'Faculty and Staff', 'Research and Professional Programs', 'K-12 Outreach', 'Resources for Career Students', and 'News and Events'. The central text highlights 'Undergraduate Programs' and lists six degrees: Biomedical Materials Engineering & Science, Ceramic Engineering, Electrical Engineering, Glass Engineering Science, Materials Science & Engineering, and Mechanical Engineering. It also mentions that all programs offer plenty of opportunities for students to engage in undergraduate research and co-curricular activities. A small image shows a student working at a computer. At the bottom, there is a 'Contact Us' section with the school's address (1 Saxon Drive, Alfred, NY 14802) and phone/fax numbers.

Center for Prototype Manufacturing of Nano-Structured Electroceramics

New Alfred facilities now available for evaluation of your fast-fire problem!

A new class-10,000 clean-room facility located at the Alfred, NY, Ceramic Corridor Innovation Center is now ready for critical electro-ceramic device fabrication. The NYSTAR-sponsored Center for Prototype Manufacturing of Nanostructured Electroceramics is a partnership between the Center for Advanced Ceramic Technology (CACT) at Alfred University and the Center for Advanced Materials Processing (CAMP) at Clarkson University.

In Alfred, equipment and expertise are available to manufacture prototype electronic components. Fabrication techniques include tape casting, screen printing, lamination, die-pressing, and isostatic pressing among others. Innovative firing techniques such as conventional fast-fire processing and microwave sintering will be used to retain the nano-structure.

Associated facilities have the capability to characterize component



The new 3KW 30-inch diameter microwave firing chamber offers controlled atmosphere or vacuum with temperature monitoring using both optical pyrometry and thermocouple sensors.

performance using impedance spectroscopy, insulation resistance, and strain-polarization analysis, making comparisons to appropriate industry benchmarks. The staff have experience with a wide range of materials and can

evaluate samples as either formed shapes or as powders to be fabricated in the clean-room facilities.

In addition, specialty powders can be produced through CAMP at Clarkson University. CAMP researchers design and produce novel reactors for pilot scale synthesis of nano-particles and have pioneered a process intensification method capable of delivering pilot-scale throughput of up to 1 kg dry powder per day and can produce quantities of both single composition and core-shell particles for further evaluation and processing in the Alfred, NY, Center for Prototype Manufacturing.

For further information on using these new facilities to address your manufacturing or powder synthesis problem, contact Gary DelRegno, delregge@alfred.edu.

AU presents 48-Hour Challenge 2007!

The 48-Hour Challenge is a contest between teams representing their high schools, and with real cash prizes going to the winning team members and schools. Only 20 teams can compete and, as of 3/15/2007, any new initial registrations will be wait-listed.

Each team must consist of five members who are currently freshmen, sophomores or juniors in high school, plus an advisor. Teams must be available to come to the Alfred University campus for the competition, June 25-

27. In just 48 hours, from 1 pm on June 25 to 1 pm June 27, each team will use the AU lab facilities to solve the "problem".

Registered teams receive hints on this year's science-based mystery so they can prepare and research their theories prior to the competition. Winners will be announced at the awards luncheon on the afternoon of June 27.

For more information, go to <http://engineering.alfred.edu/challenge>.

Fractography update

Proceeding of Fractography of Glass and Ceramics V available June 2007

The proceedings of "Fractography of Glasses and Ceramics V" (July 9-12, 2006, Rochester, NY) are now in press at John Wiley and Sons. The volume, edited by George Quinn (NIST), Dr. James Varner and Marlene Wightman, will be sent to registered conference participants as soon as it becomes available.

Copies will also be available for purchase through the American Ceramic Society website, www.ceramics.org.

CANY

(Continued from page 4)

and guests were treated to a tour of AU's Engineering lab facilities, enjoyed a humorous introduction to materials science by Dr. William C. LaCourse and Dr. Alexis G. Clare, and were honored by the School and CANY at the Award

Banquet. At the banquet, each student was presented with a Inamori School of Engineering sweatshirt, a CANY medallion and a certificate for their achievements.

Mr. Keith Leackfeldt (BS CE 1974), Ferro Corporation and CANY Vice President, gave a dinner talk on Ceramic Engineers in Industry.

The CANY Scholastic Achievement Award is given to recognize a student who demonstrates a solid mathematical and scientific background, excels in English, and is an outstanding citizen in their school and community. Nominations are submitted by their teacher or guidance counselor.

LaCourse receives Morey Award

Dr. William C. LaCourse, Kruson Distinguished Professor of Glass Science, will receive the distinguished 2007 George W. Morey Award.

The award, given annually by the Glass and Optical Materials Division (GOMD) of the American Ceramic Society, recognizes achievements in the field of glass science and technology.

LaCourse receives this honor for contributions in glass structure and mechanical properties of glass, particularly a series of publications that have provided novel insights into the structures of As_2S_3 and silicate fibers, on the effect of forming conditions on fiber



Dr. Bill LaCourse

structure and properties, and the environment-structure-mechanical properties of glasses.

The award presentation will take place at the upcoming meeting of the **American Ceramic Society Glass and Optical Materials Division meeting**, 20-23 May 2007, Rochester, NY. LaCourse will present the Tuesday morning Morey Award Lecture on May 22nd.

LaCourse will also chair a session at the meeting, and will be joined by many of the Glass and Engineering Science (GES) faculty of the Kazuo Inamori School of Engineering who will be presenting their research (see at right).

18th University Conference on Glass Science and Glass and Optical Materials Division Rochester, NY May 20-23, 2007

School of Engineering presentations:

GOMD-S4-002-2007 *Electrical Conductivity of Alkali Germanate Glasses*
J. E. Shelby*

GOMD-S1-016-2007 *Study of the Structure of B_2O_3 - SiO_2 Glasses by Nuclear Magnetic Resonance*
R. Kuchler, J. Lambert, O. Kanert*, R. Bohmer, Univ. Dortmund, J. Shelby.

GOMD-S4-010-2007 *Crystallization Behavior of Mixed Alkali Germanate Glasses*
M. Ashton-Patton*, J. E. Shelby.

4:00 PM GOMD-S4-012-2007 *Oriented Cordierite Glass-Ceramics*
M. E. Miller*, S. T. Mixture.

GOMD-S2-010-2007 *DNA Adsorption to Glass Surfaces*
K. L. Carlson*, M.T. Hall.

GOMD-S3-007-2007 *Photoluminescence and Electron Spin Resonance of Gd^{3+} Lithium Gadolinium Borate Glasses*
A. S. Geleil*, M. M. Hall, J. E. Shelby.

GOMD-S4-019-2007 *Surface Corrosion of Calcium Aluminate Glasses*
K. L. Carlson*, M. M. Hall.

GOMD-S5-014-2007 *Estimations of Strong and Fragile Liquid Behavior in Lithium Alumino Borate and Lithium Gadolinium Borate Glasses, and Observation of a "Super-strong" Glass*
A. S. Geleil*, M. M. Hall, J. E. Shelby.

GOMD-S4-020-2007 *Water Diffusion and Solubility in Silicate Melts (Invited)*
J. E. Shelby*, D. B. Rapp, M. G. Mesko, M. M. Hall.

GOMD-S4-022-2007 *Formation of Transition-Metal Crystallites in Glass*
M. E. Miller*, James Shelby.

GOMD-S4-023-2007 *Use of Fluorescence Spectroscopy to Monitor the Behavior of Tin in Glass*
A. Clare*; J. Frackenpohl, Owens Illinois, USA; S. Aoki, M. Kawaguchi, NEG, Japan.

GOMD-S4-024-2007 *Photo-Induced Out-gassing of Hollow Glass Microspheres*
F. C. Raszewski*, M. M. Hall, J. E. Shelby.

GOMD-S4-026-2007 *Recovery and Purification of Hydrogen from Mixed Gas Streams via Absorption into Hollow Glass Microspheres (HGMS)*
J. Rich*, J. E. Shelby.

GOMD-P14-S4-013-2007 *Electrical Properties of Mixed Alkali Germanate Glasses*
M. M. Ashton-Patton*, J. E. Shelby.

GOMD-P15-S4-025-2007 *Hydrogen Reactions with Germanium Silicate Glasses*
E. Birtch*, Corning Incorporated, USA; J. E. Shelby.

Faculty Briefs



Dr. Alastair Cormack presented recent research at the Royal Society of Chemistry, Faraday

Discussion meeting, at University College London (UCL) from 2-4 April 2007.

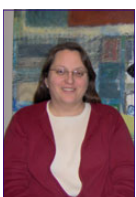
Cormack will be an invited speaker at the 16th International Conference on Solid State Ionics (SSI-16, Shanghai, China, 1-6 July 2007) and is also co-author of two invited presentations at ICG2007, the International Congress on Glass (Strasbourg, France, 1-6 July 2007).

Cormack is also a member of the Organizing Committee of "Science and Art in Ceramics" (London, 27-29 June 2007).



Dr. Rebecca DeRosa is the organizer of the Mattiello Symposium at the 2007 meeting of the Federation for

Coatings Science and Technology (www.coatingstech.org). (Toronto, 11-15 October 2007).



Dr. Doreen Edwards, with graduate students Jake Amoroso and Brian Riley, will be presenting their recent

research at SSI-16 in Shanghai.

Edwards was also a participant in the recent "Biotech Workforce Development Summit" sponsored by the Performance Institute in Arlington, VA.



Dr. Lisa Flick assistant professor of Biology and BMES, will present recent work on "Inhibition of

TNF-alpha production by macrophages in response to lipopolysaccharide following treatment with zinc or copper-doped bioactive

glass" at the 2007 Annual Meeting of the Society for Biomaterials (Chicago IL, 18-21 April 2007), the beginning of what Flick and

Dr. Matt M. Hall hope to be a very productive collaboration.

Dr. Scott Mixture is



organizer of the session "Detectors & Sources" for the Denver X-ray Conference, 30 July - 3 August 2007, Colorado

Springs, CO (www.dxcicdd.com/07/). Mixture's group will present several research contributions at the meeting.

Mixture, a Fellow and Board of Directors member of the International Centre for Diffraction Data, was recently an invited attendee at the semiannual meeting of the US National Committee for Crystallography.

CEER holds planning meeting, launches updated website

The Center for Environmental and Energy Research at Alfred University (CEER) held its inaugural meeting of the Strategic Planning Board on February 9, 2007.

Attending were: Alastair Cormack (SOE Dean, ex-officio member); Board members David Earl, associate professor of ceramic engineering and materials science; Michelle Hluchy, professor of geology; James Shelby, professor of glass science; Harrie Stevens, CGR director (via phone); and Terese Vascott, CEER director.

The role of the SPB is to provide faculty-level guidance to the Center in strategic planning and long-term research and funding goals. CEER's focus is on graduate-level research in 1) materials and processes for clean, renewable energy, and 2) improvements in materials efficiency, environmental impact and recycling.

CEER has also launched its update website, ceer.alfred.edu, with exciting news on current programs and initiatives.

Short Courses for 2007

For further information contact Marlene Wightman, Director of Continuing Education, wightman@alfred.edu or go to <http://engineering.alfred.edu/shortcourses/>

Fundamentals of Ceramics and Ceramic Manufacturing May 21-23, 2007

Attendees will learn through hands-on experience in a laboratory setting, coupled with classroom presentations and discussions. Useful for anyone concerned with ceramic materials or products, you will gain a better understanding of what your company does and/or what your technical people are talking about.

Instructor: **Dr. William M. Carty**, Professor of Ceramic Engineering.



Introduction To Glass For Managers June 7-8, 2007

The course will cover the basic material behavior of glass (compared to polycrystalline materials) and the optical, mechanical, thermal, electrical, chemical and magnetic properties of glasses; the manufacture of glass, including all of the traditional glass melting and fining procedures as well as nontraditional glass fields; and glass applications.

Instructor: **Dr. Alexis G. Clare** is the Norman and Evelyn Fierer Chair of Science, Department Chair for Glass Science and the Interim Chair for Biomaterials.



Fracture Analysis of Glass and Ceramics June 11-14, 2007

Engineers, scientists and technicians interested in strength and fracture-mechanics testing, fracture issues related to process development or control, or failure analysis (during production, testing, or service) will find this course extremely rewarding. Reserve early; this course has been sold out almost every year for over 10 years.

Instructors: **Dr. James Varner**, Professor of Ceramic Engineering,

George Quinn is a Ceramic Engineer with the National Institute of Standards and Technology, Gaithersburg, MD.



Plan now for MS&T'07!

September 16-20, 2007
COBO Center
One Washington Blvd
Detroit, MI



The Inamori School of Engineering will have an active presence at the upcoming MS&T'07. In addition to research presentations, posters and student events, plan on visiting us at the Exhibition!

COBO Center, Booth 620

Tuesday, September 18 – 11:00 am to 7:00 pm

Wednesday, September 19 – 10:00 am – 5:00 pm

Our MS&T'07 Alumni Event will be a great time to reconnect with faculty and friends.

Marriott Renaissance Center Hotel
Detroit, Michigan

Tuesday, September 18, 2007

7:00 – 9:00 pm

For free exhibition passes contact: Marlene Wightman wightman@alfred.edu.

CGR: new projects for 2007

The Industry-University Center for Glass Research (CGR) membership met in Daytona Beach, FL, in January 2007, immediately following the Cocoa Beach Meeting to consider new research proposals.

The member companies elected to support two additional projects for 2007:

Professor Richard Brow, University of Missouri, Rolla received funding for one graduate student to study "Process Effects on Glass Homogeneity"

Professor Karl Mueller, The Pennsylvania State University, received funding for a graduate student to continue studying "Effects of Process on Glass Adsorption Sites".

The CGR currently supports an ongoing project with Professor Scott Mixture of Alfred University on "Batch Melting Kinetics and Liquid Phase Evolution".

AU presents the 48 Hour Challenge for 2007

Registration is well underway for the 2007 edition of the Alfred University 48 Hour Challenge. Once again, we are preparing a really cool Challenge for participating high school teams!

... see story on Page 5!

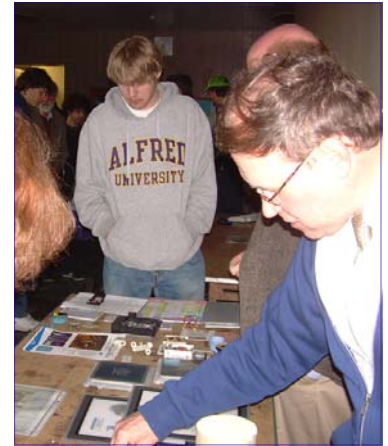
Purple & Gold Days 2007 - AU welcomes new Engineers -

Accepted students for Fall 2007 admission to the Inamori School of Engineering were welcomed to Alfred University campus to learn more about our programs on "Purple and Gold Day" visits, April 1st and April 14th.

On each of the visitation days, about 40 students and their families came to learn about AU and engineering. After welcoming remarks, prospective engineers and their families met with the faculty and numerous student demonstrators; learning about materials properties and devices, robots, computer voice recognition, and gravity vehicle design. Glass blowing and advanced processing using microwaves were demonstrated while a sensor equipped robot meandered through the crowd.

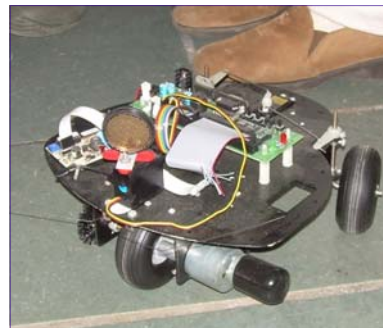
The demonstrations were all a small interlude in the day's very full schedule of informational seminars, lab tours, and question-answer sessions.

We look forward to getting to know this interested group a lot better in September!



Images, clockwise from top left:

- Dr. Scott Misture explains examples of technical ceramics, including ceramic armor;
- Dr. Bill Carlson shows examples of electronic materials in everyday objects;
- Undergraduate Steve Peifer (ME) discusses his Extreme Gravity race vehicle while EE students Jamie Waite and Nick Martucci demonstrate computer voice recognition and robotics;
- ME's self-steering robot tried to stay out from underfoot;
- Anatoly Kishinevski (GES) demonstrates glass blowing equipment and techniques. Kishinevski is the founder of the Alfred Technical Glass Club.



AU Engineering News is a print version of our on-line newsletter. For complete news and updates, go to <http://engineering.alfred.edu/newsletter/current>

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