Engineering News

Kazuo Inamori School of Engineering
Alfred University

Volume 11, Number 2 February 2010

Also inside this issue …

2010 Summer Institute in Science and Engineering

Engineering the Elements

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Polymers and Electronic Ceramics

June 27-July 1, 2010

The 2010 Summer Institute in Science and Engineering promises to be an exciting opportunity for high school students to learn more about engineering, to sample life on a college campus and to meet other students with similar interests and academic ability.

www.alfred.edu/summer/camps/science.cfm

CACT has new director, new offices

The Center for Advanced Ceramic Technology (CACT) at Alfred University has undergone significant changes - to move forward in streamlining operations while best serving our research partners.

Dr. Matthew Hall, associate professor of biomaterials and glass science, assumed the Directorship in January 2010. Former director, **Dr. Vasantha Amarakoon**, professor of ceramic and electrical engineering, has returned to full-time teaching and research after 12 years of valuable leadership.

The CACT staff moved to new offices located on the ground floor of McMahon Building during January 2010, establishing an internal "research corridor" in the Inamori School of Engineering. Director Hall and the CACT are now located in MCM 120. Mrs. Marlene Wightman, Director of Continuing Education/Outreach, and her staff are located in the neighboring office suite, MCM 130.

Here to introduce himself and describe ongoing changes within the CACT is the new Director, Dr. Matt Hall:

First, for those readers who do not already know me, a brief introduction - I have been a member of the Alfred University community since July of 1998 when I arrived as a fresh-faced graduate student, having just completed a BS in Ceramic Engineering from University

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Save the Dates!

SAMUEL R. SCHOLES AWARD LECTURE
Thursday, April 15, 2010
Holmes Auditorium

Dr. James E. Shelby, Professor of Glass Science, will present the 2010 Samuel R. Scholes Award Lecture on Thursday, April 15, in Holmes Auditorium at 11:20 am. The morning lecture will be followed by an award luncheon at Susan Howell Hall. After the luncheon, the AU Graduate Student Chapter of the Materials Research Society will sponsor a research poster session upstairs.

Shelby will present recent advances in the application of hollow glass microsphere (HGM) technology and developments in developing and understanding their unique properties. For his complete abstract and biography, go to **engineering.alfred.edu/lectures/scholeslect.cfm.**

Dr. Jim Shelby

THE INAMORI KYOCERA FINE CERAMICS MUSEUM
Opening Ceremony
October 14, 2010

The Inamori Kyocera Fine Ceramics Museum will be formally dedicated at an Opening Ceremony on October 14, 2010. Dr. Kazuo Inamori, Founder and Chairman Emeritus of the Kyocera Corporation is expected to lead the ribbon-cutting ceremony.

The renovation of the space on the top floor of Binns-Merrill Hall is moving along on schedule. The renovated space will house not only the new museum exhibits but also a dedicated learning center and laboratory space.

Rein, VonBerg honored for professionalism

Thomas Rein

Kaleb VonBerg

Seniors Thomas Rein (CE) and Kaleb VonBerg (ME) were honored at the October 22, 2009, McMahon Award Lecture in recognition of their outstanding Co-op performances.

Rein was named as the 2009 recipient of the annual McMahon achievement award. VonBerg was named the 2009 recipient of the McComsey Career Development Center outstanding EE/ME Co-op Award.

The John F. McMahon Achievement Award winners are selected on the basis of their co-op experience rating and letters of recommendation following a co-op assignment. The award has been given to an outstanding ceramic engineering co-op student since 1991 in honor of McMahon's lifetime commitment to ceramic engineering education.

The Robert R. McComsey Career Development Center Outstanding EE/ME Co-op Award winner is selected on the basis of extraordinary scholarly activity and the ability to succeed in a professional engineering environment. This is a new award for 2009.

Co-op experience is an important facet of undergraduate engineering education and professional development; the program benefits are recognized by both the participating students and their sponsoring companies.

Buttaro gains research experience at Cornell REU

Larissa Buttaro (JR MSE) participated in a successful Cornell Research Experiences for Undergraduates (REU) Program during the Summer of 2009, working with alumna Erin Hendrick (BS MSE '06), currently a graduate student in the Fiber Science & Apparel Design (a combination of materials science, polymer chemistry, and fashion design) at Cornell University.

Buttero and Hendrick's work was conducted in Cornell's Center for Materials Research (CCMR).

The studies focused on creating an electrospun fabric with pH-sensitive nanoparticals for sweat monitoring; the desired outcome is to monitor hydration levels during ultra-endurance athletics.

An REU in CCMR is a special summer research program that includes a stipend valued at $4000, room in one of Cornell's on-campus dorms and additional funds for travel for non-CU students. Students work with Cornell faculty on interdisciplinary materials research projects involving chemistry, physics, materials science and engineering disciplines and also participate in an organized program of lectures, mini-courses, laboratory visits and a variety of recreational activities. Selection is based on academic standing and faculty recommendations.

SOE student conference news

Graduate student Victoria Knox (Ceramics), council chair of the American Ceramic Society's President's Council of Student Advisors (PCSA) reports that the PCSA-sponsored symposium "The Future of Electronic Ceramics: A New Investigator Symposium" at the January 2010 Electronic Materials and Applications Conference in Orlando, FL, was a success - well attended and well received!

The symposium focused on undergraduate and graduate research in electronic ceramics and attracted about 50 people for each talk. Student presenters reported a good experience and the talks were great! Knox is already scheduling another symposium for next year's Electronic Materials and Applications conference (January 19-21, 2011, in Orlando, FL) and also has a call for papers out for a career development and outreach symposium at MS&T'10 in Houston, TX.

For undergraduates wanting to present their research at MS&T'10, Knox suggests submitting an abstract to the Journal of Undergraduate Materials Research: Undergraduate Presentations Symposium. Abstracts are due 3/15/2010. Go to the MS&T'10 website (**matscitech.org** - click on “program”/”technical program”/”special topics”) for more information on abstract submission. JUMR is an annual peer-reviewed research publication of Virginia Polytechnic Institute.

Now is also the time to think about student competitions at MS&T'10 - Materials Advantage sponsors both graduate and undergraduate research poster competitions and the Student Speaking Contest. On the practical (and fun) side of materials science and engineering, there are the ceramic putter and mug drop competitions, both organized by Keramos.

The Inamori SOE 2009 mug drop team had numerous entries in a crowded field, pictured at right. Their whimsical designs (in the foreground) were not all successful - however, 2009 winners included AU's PJ DiCesare (SR CE) who tied with Elliott Fray from the University of Washington surviving a 30-cm drop. Better get working on that 2010 team!

Higgins, Vaneck participate in international research

Global collaborations via Materials World Network

MSE graduate students Brittany Higgins and Kara Vaneck traveled in November 2009 to the Ural State University (USU) in Yekaterinburg, Russia, in order to conduct Tubandt-type electrochemical experiments under the direction of Dr. Arkady Neiman, director of the chemistry department. Their Tubandt experiments involved measuring weight changes of three disk shaped specimens of a material of interest (in this case trivalent-cation tungstates) after that material is subjected to an applied voltage for an extended period of time. The weight changes allow the researchers to identify whether the charge carrier is a positively or negatively charged species.

Higgins and Vaneck are the latest of Dr. Doreen Edwards's students to gain international research experience through the Materials World Network. Edwards, current Dean of the Inamori School of Engineering, is also professor of ceramic engineering and materials science and maintains active international research ties. The current collaboration is part of an ongoing program involving Edwards, Neiman and Dr. Stefan Adams, National University of Singapore. MSE grad student Brian Riley (BS GES 2007) was previously involved in the collaboration, working with Edwards and Adams. Through the Materials World Network, the research capabilities and specialization of each collaborating team can be complemented by the skill and experience of the others.

Vaneck reports that in addition to learning new techniques and obtaining valuable data, their 2-week international experience forged new friendships and left a lasting impression.

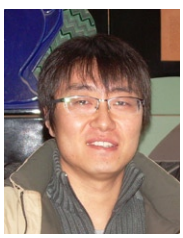
Higgins, Dr. Arkady Neiman, and Vaneck discuss their planned experiments

Denis Nechaev, Natalie Pestereva, Dr. Arkady Neiman, Higgins, Vaneck, and Anastasy (Nastya) Karapetyan.

"Dr. Arkady Neiman and his students Denis Nechaev and Natalie Pestereva were supremely hospitable. We immediately felt at home in a country whose language still mystified us. Needless to say, communication was a bit of a challenge, but by the end of our brief time there, both Brittany and I could manage to engage in short and simple conversations all thanks to Denis and Natalie who untiringly taught us important Russian words and phrases. The entire group provided a warm welcome that made the harsh, bitter weather somehow feel tropical.

I think also that both Brittany and I underestimated the significance of our visit to USU. We were actually the first ever United States students to formally visit the campus. Upon entering the school, we immediately noticed the posters announcing the seminar that we gave on the third day of our stay. Following the seminar, we were featured in a Russian newspaper. As a child born during the cold war era, it felt really nice to engage in scientific cooperation with citizens of the former Soviet Union."

Meet Samsung Fellow Young-jun Shin



The 2009-2010 Samsung Educational Fellow is Young-jun Shin. Shin comes from the Gumi Melting and Forming Group in Gumi-City, GyoungBuk, Korea, where he is an Assistant Manager. Shin's particular interest is in precious metal contamination flaws in optical glass. While at AU, Shin is taking courses in glass science and structure while improving his technical english language skills.

Samsung Corning Precision Glass (Korea) has been sending small groups of professionals to AU's Inamori School of Engineering for specialized studies in glass since 2003.

Faculty attend Kyoto Prize ceremonies, extend research ties

Celebrating the Inamori School of Engineering's connection to Dr. Kazuo Inamori and the Inamori Foundation, a delegation of faculty attended the Kyoto Prize ceremonies held November 10, 2009, in Kyoto, Japan.

Attending were (l-r), **Dr. Mark Towler**, Inamori Professor; Tara Rafferty; **Dr. Alastair Cormack**, professor of ceramic engineering and founding Dean of the Inamori School of Engineering; **Dr. Doreen Edwards**, Dean of the Inamori School of Engineering; Norman Teachman; Elise Flynn; and **Dr. Scott Misture**, Inamori Professor.

The four faculty members participated in the 3rd INAMORI Frontier Research Symposium at INAMORI Center, Kyushu University on November 13, 2009, presenting:

Mark Towler - N*ovel cements for corrective spinal surgery;*

Scott Misture - *Ceramics and glasses for energy conversion: Understanding phase transitions and atomic scale structure;*

Doreen Edwards - *Transport in complex oxides for energy applications;*

Alastair Cormack - *Interactions of water with silicate glass surfaces.*

The trip also included working visits at Kyocera corporate and research locations to continue ongoing research discussions.

CACT *(continued from page 1)*

of Missouri-Rolla (now the Missouri University of Science & Technology). After completing my graduate studies in Glass Science with Dr. Alexis Clare, I was fortunate to join the AU faculty in June, 2003. After nearly 7 years of teaching and research, I now wear a new hat as the Director of the Center for Advanced Ceramic Technology (CACT).

The ongoing mission of the CACT is to facilitate collaboration between industry and the faculty of the Kazuo Inamori School of Engineering (SOE). The economic benefits that are enjoyed by companies working with the CACT include the development of new or improved revenue-generating technologies and products, the creation of new jobs, and identifying methods to reduce energy consumption and waste. While our core mission emphasizes New York State industry, we are always available to work with any company, nationally or internationally. The ways in which the CACT works with industry are varied, such as providing analytical services, short-term troubleshooting, and longer-term sponsored research projects.

It is also my responsibility as the CACT Director to identify opportunities that are aligned with the strategic research themes of the SOE (Energy, Environment, Healthcare) and the research interests of our faculty. I am particularly excited to work with recently hired colleagues to build their research programs - their diverse backgrounds enhance our ability to respond to the unique needs of industrial partners. The skill sets of our new faculty members include topics such as nanoparticle synthesis, surface characterization and functionalization, implantable materials, and computational simulation.

While we continually strive to develop new relationships, the assistance of others is always welcome. As an alum or friend of the SOE, there are two ways that you can help the CACT in pursuing its mission. First, please keep us in mind when you have questions that could be answered by accessing our unique combination of intellectual and physical resources. While we cannot always provide a direct solution, our extensive network of connections in industry and academia often means that we can point someone in the right direction. Second, we would greatly appreciate the recommendation of our services to other organizations. The majority of my interactions with companies are responses to inquiries that are generated by word of mouth. Our reputation as a premier institution for advanced technical ceramics and glass relies in part on educating the public at large - please consider spreading the word.

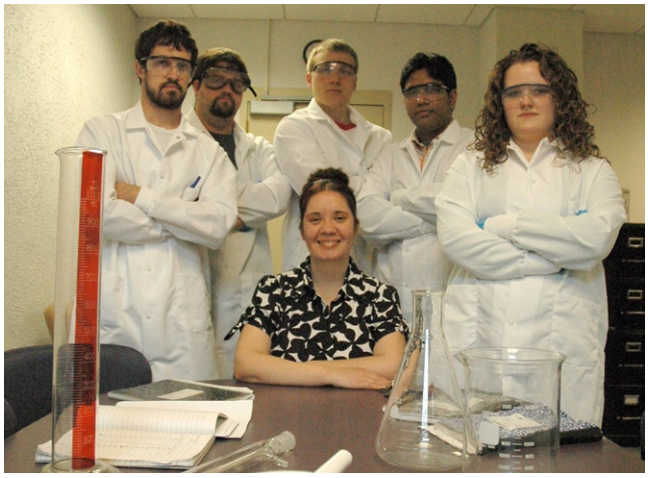
Kindest Regards,
Matthew Hall
Director, Center for Advanced Ceramic Technology
Associate Professor of Biomaterials and Glass Science

The Center for Advanced Ceramic Technology is partially supported by NYSTAR, the New York State Foundation for Science, Technology and Innovation.

Focus on Faculty: Dr. Olivia Graeve

Dr. Olivia Graeve, associate professor of materials science and engineering, leads an active group of undergrads, graduate students and post-docs - all in the forefront of advanced nanomaterials development.

Graeve joined the Inamori SOE in August 2008, coming from the University of Nevada, Reno, as an active researcher in the synthesis and processing of nanostructured materials. Her expertise in nanomaterials now bears fruit in publications and patents resulting from current work at AU.



Pictured above: Seated, Dr. Olivia Graeve; standing, l-r, James Kelly (PhD Ceramics), Brandon Williams (PhD MSE), Michael Saterlie (PhD MSE), Raghunath Kanakala (post-doc), Katelyn Glass (SR CE)).

In 2008, Graeve was the recipient of a prestigious NSF CAREER grant on "Scaled-Up Manufacturing of Nanostructured Refractory Ceramics for High-Temperature Applications." Funding on the "Processing of Nanostructured Borides for Multifunctional Applications" (through the Army Research Office) has resulted in a recent patent application (starred).

Recent patent submissions from ongoing research and collaborations include:

*O.A. Graeve, R. Kanakala, and G. Rojas-George, "*Combustion synthesis method and boron-containing materials produced therefrom*," US Patent Appl 12/472,050 filed 5/26/09.

O.A. Graeve and J. Ruppert, "*Novel process for mesoporous materials for solid oxide fuel cell applications*," Provisional US Patent Appl 61/271,856 filed 7/27/09.

O.A. Graeve, B. Pearson, James Tinsley, and Wilfred Lewis III, "*Combustion synthesis method and materials produced therefrom*," US Patent Appl12/559,018 filed 9/14/09.

K. Sinha, B. Kavlicoglu, Y. Liu, O.A. Graeve, and F. Gordaninejad, "*Process for the development of metallic nanopowders*," Provisional US Patent Appl 61/283,785 filed 12/23/09.

She continues work with AMAD, Inc (Reno, NV) on using nanomaterials for advanced heat transfer applications (supported by NSF Small-business technology transfer (STTR) funding) and with international colleagues on novel nanocomposites via an NSF Inter-American Materials Collaboration (CIAM) on "Novel Synthesis and Sintering Process for Nanostructured Oxide and Carbide Ceramic Composites" (in affiliation with Materials World Network).

A skilled teacher, Graeve teaches CEMS 543 - Analytical Transmission Electron Microscopy (a graduate course), CEMS 216 - Bonding and Structure of Materials, and CEMS 438 - Nanotechnology.

Congratulations to Engineering and Materials Science Day scholars

The Alfred University annual Engineering and Materials Science Day, November 12, 2009, brought 70 students from 9 western New York high schools for a day of learning and a scholarship exam competition. After the morning exam, the students and their chaperones toured the laboratory facilities of the Inamori School of Engineering - including the STEP lab, Hall of Glass Science, Binns-Merrill Hall and McMahon Engineering Building.

Pictured with Dr. Walter Schulze, professor of ceramic engineering and materials science, is the First-place winner Charlotte Sanfilippo (Orchard Park HS). Sanfilippo is accompanied by Orchard Park teacher George Deshaies.

Second-place winner was Alex Decker (Wayland-Cohocton Central School). Third-place winner was Sarah Wolcott, also from Wayland-Cohocton.

First, Second and Third placed students each received a 4-year scholarship that can be applied toward tuition in any of AU's engineering programs. First place is $2,500 per year (total of $10,000); second place is $2,000 per year (total of $8,000); and third place is $1,500 per year (total of $6,000).

The next AU Materials Science and Engineering Scholarship Day is slated for November 2010. Schools are invited to bring a maximum of ten junior and/or senior students to AU to participate in a scholarship opportunity. For more information and to put your school on our mailing list please contact: Marlene Wightman, Director of Continuing Education/ Outreach, **wightman@alfred.edu** 607.871.2425.

On-Campus Short courses on tap for 2010

FRACTURE ANALYSIS AND FAILURE PREVENTION OF GLASSES AND CERAMICS (June 22-25, 2010)

Instructors:
Dr. James Varner, professor of ceramic engineering
Inamori School of Engineering

Mr. George Quinn
Ceramic Engineer (retired)
National Institute of Standards and Technology

This course covers the examination and interpretation of markings on fracture-exposed surfaces of glasses and polycrystalline ceramics, and the analysis of crack systems, i.e., fractography. Further, it covers using fractography in failure analysis, strength testing, and fracture-mechanics testing. The mechanisms by which fracture markings are produced will be explained, and the information provided by the markings (e.g., in estimating stress at failure, in making measurements for fracture toughness tests, will be emphasized. Observation and documentation techniques will be covered. The role of fracture analysis in failure prevention is emphasized throughout the course. This is a hands-on course!

http://engineering.alfred.edu/shortcourses/fracture.cfm

INTRODUCTION TO CERAMIC PROCESSING
May 24-26, 2010

Instructor:
Dr. William M. Carty, professor of ceramic engineering
Inamori School of Engineering

This course will address the concerns of ceramic processing from a comprehensive perspective - lecture topics will begin with understanding the raw materials and their characterization, both physically and chemically, and progress to evaluating the role of mixing, use of dispersants, impact of specific gravity, use of polymeric additives, and the contribution of time (aging) on the viscosity and performance of particle suspensions. Different rheological properties including dilatancy and thixotropy will be addressed through the use of practical examples. Recommendations for characterization and monitoring equipment will also be provided.

The course will culminate with discussions illustrating how the processing contributes to the final microstructure and phase evolution in a heat treated ceramic component. Case studies and suggestions for additional reading will be provided throughout the course.

http://engineering.alfred.edu/shortcourses/introtoceramicprocessing.cfm

Faculty news in brief...

During the semester break, **Dr. Vasantha Amarakoon** traveled to Sri Lanka to participate at a symposium organized by CENTEC, the Center for Technical Excellence in Ceramics (Sri Lanka). His presentation at the symposium was titled "Advances in nanotechnology (nanoceramics) relevant to materials for alternative energy applications." He also visited the University of Peradeniya, Sri Lanka, where he gave a lecture on "Nanoceramics for solid state lighting applications. In addition, he visited several Sri Lankan ceramic industries to discuss opportunities for collaboration.

Also in December 2009, **Dr. Alastair Cormack**, professor of ceramic engineering, took up invitations to visit the China University of Geosciences (CUG) and The Wuhan University of Technology (WHUT), both in Wuhan, China. At CUG, Cormack gave a lecture entitled "Atomistic Simulations of Ceramics and Glass", and was appointed as Visiting Professor at CUG.

At WHUT, where he is also a Visiting Professor, he gave a talk entitled "Atomistic Simulations of Silicate Glasses". He also reached an agreement to cooperate with them on research matters of mutual interest, in photocatalysis and glasses. A Visiting Scientist from WHUT will come to AU later this year on a scholarship from the China Scholarship Council to work with Cormack and his group.

Dr. Jim Shelby, professor of glass science, is a visiting professor at Virginia Tech for the Spring 2010 semester, teaching “Introduction to Glass Science.” Shelby is also this year’s Scholes Award Lecturer (see story, page 1).

Dr. Scott Misture, Inamori Professor, is one of two main organizers of the symposium “Advanced Structure Analysis and Characterization of Ceramic Materials” at the 3rd International Congress on Ceramics (14-18 November 2010, Osaka, Japan). His co-organizer is Dr. Masatomo Yashima (Tokyo Institute of Technology). The meeting is organized by The Ceramic Society of Japan.

Dr. Arun Varshneya, professor of glass science, was the guest of Professor Ahmed A. Ahmed and the National Research Center (NRC) of Cairo (Egypt) in January 2010. Varshneya toured the facilities of the glass department and presented two seminars to faculty and senior students that included a technical presentation on the chemical strengthening of glass and an informative presentation on graduate studies in the Inamori School of Engineering. The latter presentation, specifically requested by Professor Ahmed, was intended to explore opportunities for NRC to have improved working relations with AU. As a result, SOE, NYSCC and the NRC are beginning to explore hosting an NRC glass arts faculty member for an Egyptian government-sponsored sabbatical leave as well as a post-doctoral glass engineering research fellow to spend up to 6 months at AU.

Recent Faculty publications: June-December 2009

Books

Fostering Visions for the Future: A Review of the NASA Institute of Advanced Concepts. R.D. Braun, D.S. Wiley, H.W. Brandhorst Jr., D.C. Byers, D. Chenette, I. Chopra, F.D. Drake, **O.A. Graeve**, M.G. Jones, R.A. Moore, E. Phillip Muntz, L.R. Young. The National Academies, Washington, D.C., 2009.

Patents

J.C. Farmer; F.M.G. Wong; J.J. Haslam; N. Yang; E.J. Lavernia; C.A. Blue; **O.A. Graeve**; R. Bayles; J.H. Perepezko; L. Kaufman; J. Schoenung; and L. Ajdelsztajn, (Lawrence Livermore National Security, LLC, USA). "Spray coating of steel pipe surfaces with corrosion-resistant amorphous metal based composite," US/2009/7,618,500, (2009).

J.C. Farmer; F.M.G. Wong; J.J. Haslam; N. Yang; E.J. Lavernia; C.A. Blue; **O.A. Graeve**; R. Bayles; J.H. Perepezko; L. Kaufman; J. Schoenung; and L. Ajdelsztajn, (Lawrence Livermore National Security, LLC, USA). "Corrosion resistant amorphous metals and methods of forming corrosion resistant amorphous metals," US/2009/7,618,500 (2009).

B. Disteldorf; P.K. Sharma; and **N.P. Mellott**, (Centre Luxembourgeois de Recherches pour le Verre et la Ceramique S.A., Luxembourg; Guardian Industries Corp.). "Method of making glass including surface treatment with aluminum chloride using combustion deposition prior to deposition of antireflective coating " 2008-US/011218; WO/2009/075705 (2009).

Journal Articles

Biomaterials

D. Boyd; S. Murphy; **M.R. Towler**; A.W. Wren; and S. Hayakawa, "Analysis of -irradiated synthetic bone grafts by ^{29}Si MAS-NMR spectroscopy, calorimetry and XRD," J. Non-Crystalline Solids, 355 [45-47] 2285-8 [http://dx.doi.org/10.1016/j.jnoncrysol.2009.07.014] (2009).

Z. Sun; A. Goldhirsch; K.N. Price; M. Colleoni; A. Ravaioli; E. Simoncini; I. Campbell; R.D. Gelber; and **M. Towler**, "Bone Quality Test (BQT) scores of fingernails in postmenopausal patients treated with adjuvant letrozole or tamoxifen for early breast cancer," Breast, 18 [2] 84-8 (2009).

M.R. Towler; D. Boyd; C. Freeman; I.M. Brook; and P. Farthing, "Comparison of in vitro and in vivo bioactivity of SrO-CaO-ZnO-SiO_2 glass grafts," J. Biomater. Appl., 23 [6] 561-72 (2009).

E.A. Varmette; J.R. Nowalk; L.M. Flick; and **M.M. Hall**, "Abrogation of the inflammatory response in LPS-stimulated RAW 264.7 murine macrophages by Zn- and Cu-doped bioactive sol-gel glasses," J. Biomedical Materials Research - Part A, 90 [2] 317-25 [http://dx.doi.org/10.1002/jbm.a.32098] (2009).

A. Wren; O.M. Clarkin; F.R. Laffir; C. Ohtsuki; I.Y. Kim; and **M.R. Towler**, "The effect of glass synthesis route on mechanical and physical properties of resultant glass ionomer cements," J. Materials Science: Materials in Medicine, 20 [10] 1991-9 [http://dx.doi.org/10.1007/s10856-009-3781-6] (2009).

Materials Properties and Processing

D.J. Curran; T.J. Fleming; G. Kawachi; C. Ohtsuki; and **M.R. Towler**, "Characterisation and mechanical testing of hydrothermally treated HA/ZrO2 composites," J. Mater. Sci.: Mater. Med., 20 [11] 2235-41 (2009).

J.R. Varner, "Replicas as a Technique for Examining fracture surfaces of ceramics," Key Engineering Materials, 409 107-12 [http://dx.doi.org/10.4028/www.scientific.net/KEM.409.107] (2009).

I.Y. Kim; **M.R. Towler**; A. Wren; and C. Ohtsuki, "Fabrication of spherical CaO-SrO-ZnO-SiO2 particles by sol-gel processing," J. Mater. Sci.: Mater. Med., 20 [11] 2267-73 (2009).

K. Sinha; B. Kavlicoglu; Y. Liu; F. Gordaninejad; and **O.A. Graeve**, "A comparative study of thermal behavior of iron and copper nanofluids," J. Applied Physics, 106 [6] [http://dx.doi.org/10.1063/1.3225574] (2009).

K. Sinha; B. Pearson; S.R. Casolco; J.E. Garay; and **O.A. Graeve**, "Synthesis and consolidation of $BaAl_2Si_2O_8$:Eu: development of an integrated process for luminescent smart ceramic materials," J. American Ceramic Society, 92 [11] 2504-11 (2009).

Modeling Glass Properties

J.C. Mauro; P.K. Gupta; and **R.J. Loucks**, "Composition dependence of glass transition temperature and fragility. II. A topological model of alkali borate liquids," J. Chemical Physics, 130 [23] [http://dx.doi.org/10.1063/1.3152432] (2009).

J.C. Mauro; **R.J. Loucks**; and P.K. Gupta, "Fictive temperature and the glassy state," J. American Ceramic Society, 92 [1] 75-86 [http://dx.doi.org/10.1111/j.1551-2916.2008.02851.x] (2009).

Modeling Materials Properties

S. Xu; X. Zeng; Z. Gao; H. Chen; and **J. Fan**, "Experimental and theoretical study of the cyclic relaxation of die cast magnesium alloy," pp 991-8 in Materials Science Forum, Vol. 610-613 (proceedings of The 3rd Int'l Symp on Magnesium, Chongqing, China, June 9-12, 2008.); Trans Tech Publications Ltd (2009). [http://dx.doi.org/10.4028/www.scientific.net/MSF.610-613.991]

X. Zeng; H. Chen; Z. Gao; and **J. Fan**, "Mechanical testing and numerical simulation of the fracture toughness of magnesium alloy AM60 under impact loading," pp 859-65 in Materials Science Forum, Vol. 610-613 (proceedings of The Third International Symposium on Magnesium, Chongqing, China, June 9-12, 2008.); edited by Trans Tech Publications Ltd (2009). [http://dx.doi.org/10.4028/www.scientific.net/MSF.610-613.859]

Modeling Materials Structure

B. Chen; S. Sun; X. Peng; and **J. Fan**, "Investigation on screwy microstructure of Solid-trough shell," Key Engineering Materials, 396-398 453-6 [http://dx.doi.org/10.4028/0-87849-353-0.453] (2009).

F. Ye; T. Mori; D.R. Ou; and **A.N. Cormack**, "Dopant type dependency of domain development in rare-earth-doped ceria: An explanation by computer simulation of defect clusters," Solid State Ionics, 180 [20-22] 1127-32 [http://dx.doi.org/10.1016/j.ssi.2009.06.002] (2009).

Engineers in AU sports

Senior Kameron Chambliss (MSE) has qualified to compete at the NCAA Division III championships, which will be held March 18-20 in Minneapolis, MN. To qualify for the NCAA's, a diver must meet qualifying standards twice on the same board during dual meets, or once at a conference championship meet.

Chambliss was named the Empire 8 Conference's Male Athlete of the Week in late January, He was honored for his performance in dual meets against visiting RIT and Pitt-Bradford.

In other sports news, point guard Gary Kwiecien (JR CE) and center Bryan Bobo (SO BMSE) are consistent starters for the Saxons this season. In AU Men's track, five engineers have been consistent contributors to AU team scores. Competing in the distance events are Kirk Peskor (Sr EE), David Cogswell (JR ME), Jesse Schuster (SR MSE) and Kenneth Noll (SO MSE). Noll is a versatile competitor, also competing in shot put. Mitch Schrecongost (SO ME) has contributed in the 500m and triple jump events.

Both Noll and Schuster were part of the 4th place distance relay team at the recent Empire 8 Championships, contributing to AU's 3rd place overall finish on the day.

Glass & Optical Materials Division

2010 Annual Meeting
Corning, New York
May 16-20, 2010

GOMD 2010 features symposia on Glass Science, Glass Technology, Glass Corrosion, and a special symposium in honor of Professor Robert H. Doremus. Sessions will highlight a range of topics with emphasis on interdisciplinary studies incorporating physics, chemistry, materials science, mathematics, and engineering. AU and SOE faculty involvement includes: **Dr. Arun Varshneya**, professor of glass science, is organizer of "Symposium III: Glass Technology" - focusing on the forward-looking aspects of industrial glass-forming technology, as well as

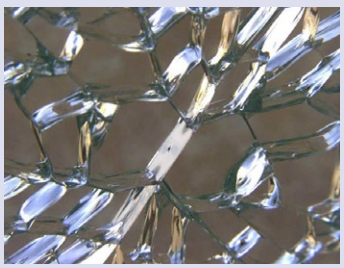
Arun Varshneya

new applications of glass and glass-ceramics for energy and environmental applications, optics and photonics, medicine and biotechnology, and high-strength products.

Dr. Matt Hall, associate professor of biomaterials and glass science and CACT director, is organizer of the symposium "Glasses for Medicine and Biotechnology" - presenting advances in bioactive glasses and glass-ceramics, glass ionomer cements, dental materials, biosensors, glasses for pharmaceutical packaging, glass-based microfluidics, and the interactions of biological systems with glass surfaces.

Dr. Roger J. Loucks, AU associate professor of physics, is co-organizer of the symposium "Glass Transition and Relaxation."

Mark your calendars!



Fractography of Glasses and Ceramics VI

5-8 June 2011 - Jacksonville, Florida

Call for papers coming in April 2010!

New web address: fractographyvi.com

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