

# AU Engineering News

Volume 6, number 3

March 2005

## Inside this issue ...

### Student News

AU Alum (and CACT) works to quench the world's thirst ... page 2  
Bright future after Co-op ... page 2  
Engineers named to Empire 8  
Presidents list, gain honors ... page 3

### Program Updates

Get excited about Science: 2005 Summer Institute ... page 8

### Research Center News

CACT News round-up ... page 4  
Technology transfer has new face at WRC ... page 4  
CEER research for the environment ... page 5

### Research and Faculty News

Advanced Alloy Research ... page 6  
Edwards works toward a bright future - electroCeraescent technology ... page 7  
New York takes lead in hydrogen economy ... page 7  
Faculty Briefs ... page 8

### Conference News

3rd Intl Conference on Ethical Issues in Biomedical Engineering June 4-6, 2005 ... page 6  
Fractography of Glasses and Ceramics V 9-12 July 2006 ... page 6

**Get excited about Science!**

**Summer Institute in Science and Engineering Alfred University July 17-21, 2005**

It's an opportunity to learn more about science and engineering, to sample life on a college campus and to meet other students with similar interests and academic ability

Full story on page 8!

## Kyocera Corporation gives \$10 million to endow School of Engineering

**K**yocera Corporation, of Kyoto, Japan, and the largest fine ceramic manufacturer in the world, will give \$10 million to Alfred University to endow its School of Engineering. The gift was announced April 7, 2005. AU intends to rename the school the Kazuo Inamori School of Engineering in honor of Dr. Kazuo Inamori, the founder and chairman emeritus of Kyocera Corporation.

With the income from the endowment AU will hire four additional faculty members specializing in the processing of advanced materials, particularly those for biomedical and photonic applications, to create a fine ceramics/nanotechnology research center. AU faculty and students will be linked in ongoing research and technical exchange programs with Kyocera Corporation engineers as they develop and explore new applications in advanced materials.



Dr. Kazuo Inamori (left), the founder and chairman emeritus of Kyocera Corporation, and Charles M. Edmondson (right), President, Alfred University at the Governor's reception in Albany to announce the endowment of the AU School of Engineering.

*(Continued on page 3)*

## Pye to Present 2005 Samuel R. Scholes Sr.

**D**r. L. David Pye, Dean and Professor Of Glass Science, Emeritus, will present the 2005 Samuel R. Scholes Award Lecture on the "History of Glass Science at Alfred University" on April 7, 2005 at 11:20 in Holmes Auditorium.

Glass, arguably the most versatile of all materials because of its extraordinary ranges of composition, methods of fabrication, properties, and applications, is an essential part of our everyday lives. Advances in the underlying science and engineering of this material have taken place various locations



Dr. Dave Pye

*(Continued on page 5)*

## 1000 year celebration of Ceramics in Jingdezhen



Dr. Harrie Stevens

**D**r. Harrie J. Stevens and Dr. William Carty, professor of ceramic engineering and Director, Whiteware Research Center, with David L. Wilcox (CE '58), represented the American Ceramic Society at the 1000th Anniversary Celebration of the naming of Jingdezhen, China, October 11-14, 2004.

Stevens and Carty presented invited talks at the International Symposium on Ceramic Materials & Engineering, a part of the celebration which also included the 1st International Ceramic Fair and Exhibition.



Dr. Bill Carty

*(Continued on page 5)*

## AU alumnus (and CACT) quench the world's thirst with ceramic filters

About 3 million people a year die from water-borne diseases and there is immeasurable productivity lost and suffering for the millions more that are afflicted, but survive, bouts with water-borne diseases. It is an acknowledged fact that 1.1 billion on the world's poor will never gain access to piped water from a pure source. What is now needed, if effect, are millions of "magic buckets" that render disease-laden water safe to drink. Globe trotting Alfred University alumnus Reid Harvey (B.F.A. Ceramic Design '88) has worked in developing countries to enable low-cost ceramic water filters to be made by local potters.

For over a hundred years porous ceramic water filters have been manufactured and successfully used - quite often by people from industrialized countries while they traveled or lived in developing countries. The technology is tested and certified but is about 20 times too expensive for the poorest people to buy and uses ceramic materials that are not found everywhere around the world, so cannot be made locally.

"In 1994" recounts Harvey, "I got a call from the U.N. to teach ceramics as



Reid Harvey, second from right, at a workshop in foundry skills at the International Community School of Abidjan, 1999.

a vocational skill in Western Sudan. While developing income-generating products for my Sudanese students, I began work on a low-cost ceramic water purifier that would remove the fecal coliform indicators that cause the diarrheal illnesses."

Since then, Harvey has developed a silver-treated, pottery water purifier - the materials and skills are available

almost anywhere that can support a local pottery and policy makers in water and health are now promoting household treatment technologies. Harvey has most recently returned to the U.S. from Nepal and been collaborating with AU Professor Emeritus Wally Higgins and Center for advanced Ceramic Technology (CACT) Assistant Director Steven Arrasmith.

"On one had, there is a technology out there that is tested and certified but way too expensive," explains Arrasmith. "On the other hand we have a very inexpensive, indigenous technology that is empirically effective but is not certified by any health agency. We would like to obtain funding to work on closing the gap between these two types of technology and identify business strategies to get filters systems to the hundreds of millions of people who need them. Two teams from Dr. David Earl's Engineering Operations class last semester chose ceramic water filters as project and developed business plans that were very interesting."

More about pottery purifiers can be found at the link:

[www.purifier.com.np](http://www.purifier.com.np)

## Student Returns from Co-op with Bright Future

*By Harlan Brown-Shaklee*

Aspiring engineers seeking quality education and practical experience find both at Alfred University. Senior ceramic engineering student Matthew Brophy from Tully, NY, found a great fit for his interests in School of Engineering's excellent faculty and strong cooperative education program (co-op). Brophy recently returned from his six month co-op with Motorola Automotive Division in Elma, NY.

Brophy's reasons for participation in the co-op program were simple. "I wanted job experience and I wanted to pave a path to my future."

At Motorola, Brophy identified a contamination source that had caused high scrap rates due to electrical component adhesion problems. Using techniques learned at AU, he eliminated the scrap culprit and improved the quality status with one of Motorola's customers. He also helped improve the strength of ceramic substrates that previously had caused component failure before their redesign.

Brophy's co-op extended from June 2004 to January 2005; he remains with Motorola as a weekend intern. But wait! It gets better! Brophy has received a job offer from Motorola "... Motorola may even pay for my graduate studies after I

apply for their tuition reimbursement program."

Not very studious before co-op, Brophy jokingly proclaims that he didn't know where the library was located before his junior year. After co-op, however, his interest in studies increased and he is often seen in the basement of Schole's Library reading journal articles. "It used to be all about getting an A or passing a difficult course but now college is about learning as much as is possible while I'm still here," he said.

Another success story is in the making! Visit <http://www.alfred.edu/cdc> for more information on AU's co-op program.

## Kyocera endowment

*(Continued from page 1)*

In announcing the gift, Kyocera officials noted AU's "tradition of instilling in its students a desire to contribute to society and mankind," as well as the key roles played by AU

graduates in advanced materials engineering.

This generous gift from the Kyocera Corporation confirms our status as the world's finest ceramic engineering program," said Robert R. McComsey, chairman of the Alfred

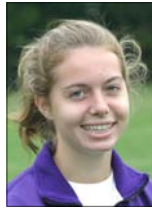
University Board of Trustees. He said the gift is the largest ever to AU's School of Engineering and one of the largest gifts in the University's history.

## Engineer Scholar-Athletes named to Empire 8 Presidents' List



James Hensel, football (senior EE).

Ashley Johnson, women's cross country-track (freshman, undecided).



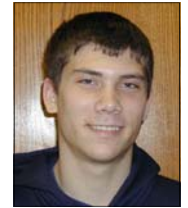
Patrick Kreski, football (sophomore



Justin Parietti, men's cross country-track (freshman,



Brian Piccardo men's soccer



Matthew Seavey, skiing (senior CE)

The Empire 8 athletic conference has announced student-athletes named to the conference's Presidents' List for the fall of 2004.

Presidents' List recipients must have earned a 3.75 grade point average or

higher. In addition, the student-athlete must display positive conduct on and off campus and be enrolled full-time at the member institution.

Congratulations to our Scholar Athletes for Fall 2004!

Not pictured: Rian Morgan, men's soccer (freshman, undecided).

## Engineer Athletes contribute to AU success, gain Empire 8 honors



Bill Brown



Kevin Martin



Brandon Striker



Patrick O'Neill



Erin Collins



Alicia Ballard



Chris Reynolds

Almost 30% of Alfred University School of Engineering undergraduates take part in varsity athletics - and many are major contributors to their teams! AU is in NCAA Division III, a division composed of school valuing scholastic achievement and athletic success, and competes in the Empire 8 conference.

In Men's and Women's Swimming and Diving the engineers are great contributors to the winning effort. The AU Men are Empire 8 Champs this year, with major contributions from Bill Brown (jun,

ME) and All-Americans Kevin Martin (sen, EE) and Brandon Striker (soph, CES).

AU's women swimmers also had a solid season, with diver Erin Collins (soph, BMES) being selected for the All-conference 1st team in 3-meter diving and All-conference 2nd team in 1-meter diving.

AU Women's Tennis featured All-American Alicia Ballard (sen, CES).

The AU 2004 Football roster included fourteen engineers this year. Kicker Chris Reynolds (freshman, ME)

was a major contributor scoring on 13 of 19 field goal attempts. Jim Hensel (senior, EE), Patrick Kreski (soph, GES) and Paul Torrey (soph, EE) also saw significant playing time.

AU Men's Soccer turned in a solid 10-6-2 season. Key performers were Adam Morgan (jun, ME), an empire 8 honorable mention, Alex Karp (jun, ME) and Brian Piccardo (freshman, MSE, also a Presidents' List athlete).



## CACT news round-up

### ATC and CACT work toward advanced aerospace materials

American Technical Coatings (ATC) is working with the Center for Advanced Ceramic Technology (CACT) to develop advanced ceramic materials for radomes, thermal protection barriers for rockets, and other aerospace applications. Located in Rocky River Ohio, American Technical Coatings sought the expertise of the CACT based on Alfred University's reputation for excellence in ceramic engineering. ATC hopes to develop ceramic bodies that exhibit compatibility with their proprietary injection molding binder system, which they call "Hotblox®".

Dr. David Earl, assistant professor of ceramic engineering and Director of the Center for Environmental & Energy Research (CEER), is principle investigator. Harlan Brown-Shaklee, an undergraduate ceramic engineering student, is research assistant for the project.

Research will focus on improved powder blending techniques and use of a wide array of ceramic materials in the next six months. ATC hopes to ascertain the ceramic formulation that will rocket

them to the top of the market for machineable aerospace materials.

### CACT EAB to meet April 7, 2005

The CACT Engineering Advisory Board (EAB) will meet April 7 th in conjunction with the annual S.R. Scholes Award Lecture, presented this year by Dr. L. David Pye, Dean and Professor of Glass Science, Emeritus.

The EAB last met in October 2004, in conjunction with the Annual McMahon Award lecture.

The Board will review CACT's current projects and Affiliate and Associate programs. The 2003-2004 economic impact of the CACT will be discussed as will be the upcoming challenges facing the CACT as preparations are made for redesignation in 2007. Representatives from NYSTAR are expected to contribute to the discussion.

### CACT Affiliates Program welcomes new members

Many companies do not have the equipment resources or a diversity of expertise to examine material questions or processing glitches on a short-term

basis. The CACT Affiliates program has been a very popular program for CACT clients and more companies are taking advantage of the services provided.

A CACT Affiliate has access to testing equipment, processing equipment and the expert operators all managed by a Principal Investigator assigned to the company's Affiliate Account. An annual fee, billed quarterly, allows the Affiliate to use our services on an "as needed" basis often receiving priority on the services provided.

Most recent Affiliates to join the CACT include:

U.S. Resistor of St. Marys , PA; Alfred Technical Services of Alfred Station, NY; Greatbatch-Hittman of Columbia, MD; Chatauqua Metal Finishing of Jamestown, NY; Cerone Inc. of Brainbridge, OH; Schunk-Inex of Holland, NY; Blackstone-Ney Ultrasonics of Jamestown, NY; Refractron Technologies of Newark, NY, and Dielectric Laboratories of Cazenovia, NY.

To learn more about the CACT and its affiliates program, go to [http://cact.alfred.edu/ind\\_affiliates.html](http://cact.alfred.edu/ind_affiliates.html).

## Technology transfer has a new face at WRC

*By Harlan Brown-Shaklee*

Technology transfer is no new term to Alfred University's Whiteware Research Center (WRC). Now a new integrated concept with the help of WRC director Dr. Harrie Stevens, master's student Nathan Zink, Dr. David Earl, Dr. James Varner and Victor Insulators in Victor, NY.

Victor's production process for its high voltage insulators has produced unacceptable scrap rates linked to the drying portion of the process. In the new concept, the WRC is to provide this mature ceramic manufacturing facility with an AU Master's student who will work with plant personnel to transfer new technologies to eliminate rim crack defects that plague Victor Insulators' production line. The new technology will then to be scrutinized using statistically analyzed data gathered both before and after integration.

Zink spends at least 1 day/wk in the Victor plant to collect data, establish new

data collection systems, and gain further understanding of baseline operations. He installed a temperature and humidity monitoring system in a drying shed to track changes in drying conditions and also developed a specimen tracking system with a method for collection of moisture data as a function of age for analysis. Data from the drying shed can be correlated to defect data using statistical analysis.

With the help of Dr. David Earl, Zink will analyze data to determine important process variables. Design of additional experiments will then be established and additional data will be collected to finalize process correlations. Zink's preliminary work has focused on data collection and methods for collection discipline; statistical analysis is just getting off the ground.

Fractography has been used, with the help of Dr. James Varner, to determine the origin of problematic rim cracks using both green and fired samples. Mechanical

testing of green ware is planned to determine critical flaw size and better understand mechanical properties of Victor's green body.

Zink plans to test ionic strength of existing Victor Insulator samples, postulating that ionic strength affects may be caused by variable salt solubility in process water as a function of ambient temperature.

The WRC is working to provide sustainable technology to Victor Insulators while improving AU's academic environment. WRC director Dr. Harrie Stevens hopes to see additional companies take part in this unique opportunity for effective technology transfer.

## CEER - research for the environment at AU

By Kathryn Goetschius

The EPA-supported Center for Environmental and Energy Research (CEER) at Alfred University utilizes AU's expertise in engineering, science, and other related fields to develop materials and processes which improve the environment. Dr. David Earl, assistant professor of ceramic engineering and materials science, is CEER Director.



Dr. Dave Earl

The Center funds research in materials and processes for clean, renewable energy, and improvements in materials efficiency, environmental impact and recycling. The United States Environmental Protection Agency (EPA) is CEER's principal partner; a complete listing of research partnerships can be found at <http://ceer.alfred.edu/about.html>.

Since CEER was started in 2000, a total of 31 projects have been funded, involving faculty and students in materials science, ceramic/glass engineering science, mechanical and electrical engineering, environmental studies, chemistry, biology, and economics.

Three faculty research grants were awarded by CEER in 2004:

*Photo-Enhanced Hydrogen Diffusion Through Glass Microspheres: Development Of Microsphere Production For Hydrogen Storage.* Building on previous research supported by CEER showing photo-enhanced hydrogen diffusion through glasses doped with optical activators, the project now requires the production of hollow glass microspheres (HGMS) of the appropriate compositions to be used to determine the kinetic parameters that control the design of a working hydrogen generator. DOE recently approved \$2.2 million in funding for a continuation of the previous project. Dr. James Shelby and Dr. Matthew Hall are the principal investigators on the project.



Dr. Jim Shelby



Dr. Matt Hall

*Nanostructured C6B: A Novel Boron Rich Carbon for H2 Storage.* The project will synthesize a novel carbon, C6B, and measure H2 adsorption and the mechanisms of adsorption. The objective of the research is for the synthesis of these novel carbons to be scaled to allow for a commercially viable

and responsive H2 storage material. Dr. Linda Jones is leading a team of researchers from AU and other institutions on the project.



Dr. Linda Jones

*Interaction Of Sealing Glasses With Metallic Interconnects In Solid Oxide And Polymer Fuel Cells.* The project will seek to establish the fundamental materials behavior during the interaction of the sealing glass with metal interconnects. The study will focus on the fundamental phase equilibria, reaction mechanisms, and reaction kinetics under oxidizing and reducing atmospheres to provide the basic science to aid fuel cell design and future materials compositional design work. Dr. Scott Mixture is the principal investigator on the project.



Dr. Scott Mixture

For more information on research and funding opportunities through CEER, contact Dr. David Earl, [earlda@alfred.edu](mailto:earlda@alfred.edu).

## Scholes lecture

(Continued from page 1)

throughout the world including the NYS College of Ceramics. As we approach the 75 Anniversary in 2007 of the establishment of the glass science programs at AU, it is appropriate to stop and take

a look back at the history of these programs and chronicle some of the major milestones in their development.

Pye will dedicate his to the faculty, staff, students, alumni, and friends of the NYS College of Ceramics who labored so hard and gave so much to

help achieve the most cherished goal of all university programs - national and international acclaim for vision, leadership, and contributions to advancing the field of glass science and engineering.

## 1000 years of Ceramics

(Continued from page 1)

The two day symposium, which attracted over 200 international participants, was jointly organized by China Silicate Association, European Ceramic Society, American Ceramic Society,

Jiangxi Province and Jingdezhen City Government.

Jingdezhen, known as "the Chinese Capital of Porcelain," is well known to AU ceramic artists and engineers - Wayne Higby, professor of ceramic art, was named an honorary citizen of Jing-

dezhen in 2004. Higby is co-founder of the San Bao International Ceramic Art Institute in Jingdezhen, a studio center near Jingdezhen where ceramic artists from around the world can come and work.

## 107th Annual Meeting, Exposition, & Technology Fair of the American Ceramic Society

The Alfred University School of Engineering and the NYS College of Ceramics will welcome alumni and friend sat Booth 212, in the Exposition, April 11 from 5-8pm and April 12 from 10am-1pm. Stop by to learn about new programs and opportunities in the School of Engineering! Drop off your business card for a chance to win a prize! The AU booth is a great meeting point to connect with faculty and friends.

Our Annual Alumni event will take place on Monday April 12 th , 5-7 pm, at the Baltimore Marriot Waterfront Hotel. Please email to Marlene Wightman, , [wightman@alfred.edu](mailto:wightman@alfred.edu), if you plan on attending!

## Third International Conference on Ethical Issues in Biomedical Engineering June 4-6, 2005

Conference Chair: Dr. Subrata Saha, professor of biomaterials science

Alfred University School of Engineering and the University of Rochester will host the Third International Conference on Ethical Issues in Biomedical Engineering, June 4-6, 2005, at the Crowne Plaza Hotel, Rochester, NY, USA. The conference is designed to bring together bioengineers, clinicians and the biomedical industry.

Presentations will range from issues in animal testing and clinical trials to the ethical issues in bioengineering research, clinical engineering, implant use and marketing, genetic engineering and cloning, and tissue engineering. Presentations on privacy concerns and a code of ethics for bioengineers are also expected.

Undergraduate and graduate students as well as medical/dental students and residency candidates are encouraged to submit papers. Several awards will be given to honor the best student papers/presentations. Please indicate on your abstract student status and if you wish your paper to be considered for a student award.

Full information can be found at <http://nyscc.alfred.edu/conferences/biomed/>

This conference is funded in part by a "Conversations in the Disciplines" grant from SUNY, and also by a Whittaker Foundation grant. A complete list of co-sponsoring organizations can be found at the website, above.

Late Abstracts may be sent for consideration to: Marlene Wightman, NYSCC at Alfred University, 2 Pine Street, Alfred, NY 14802.



Dr. S. Saha

## Fractography of Glasses and Ceramics V 9-12 July 2006 - Rochester, NY

Conference co-organizers:  
Dr. Jim Varner, Professor of  
Ceramic Engineering,  
Alfred University  
George Quinn, National  
Institute of Standards  
and Technology



Dr. Jim Varner

**Fractography of Glasses and Ceramics V** will be held 9-12 July 2006 in Rochester, NY, USA. Professor D Hull FRS FEng, Distinguished Research Fellow, Department of Materials and Metallurgy, Cambridge University, UK, will be the keynote speaker. The meeting will be held

at the Hyatt Regency Hotel, Rochester, NY, and is endorsed by the American Ceramic Society ([www.acers.org](http://www.acers.org)). Mark your calendars now, and plan to attend.

Sessions on fractography of dental and biomedical ceramics, ceramic armor, and rocks and lithic materials are planned. Full conference details, including a list of invited speakers and conference topics, will be included in the official conference announcement, coming soon to <http://engineering.alfred.edu/outreach/conferences/fractography>.

Marlene Wightman (AU) will be in charge of local arrangements. We invite

people who are interested in presenting a paper on some aspect of fractography of glasses and ceramics to get in touch at their earliest convenience. Please include a title and list of authors. Conference Proceedings will be published by the American Ceramic Society.

To receive the official conference announcement and further information about Fractography of Glasses and Ceramics V, or to indicate your intention of presenting a paper, please send an email to Marlene Wightman, [wightman@alfred.edu](mailto:wightman@alfred.edu).

## Advanced Alloy Research links industry and academe, experiment to performance

Dr. Jinghong Fan, professor of mechanical engineering, is a leading researcher on the modeling of fatigue failure of advanced lightweight alloys. Before AU, Fan worked with a team at Georgia Tech to successfully model the behavior of advanced lightweight aluminum alloys in use today. Fan collaborates internationally now on the advanced lightweight magnesium alloys.



Dr. Jinghong Fan

Modeling of crack growth and fatigue failure in a new alloy is essential prior to its acceptance for systems application for

consumer use, as in automotive design. Failure at high speed of critical components such as wheels is unacceptable.

Fan's team at AU uses advanced fatigue testing under complex and controlled stress state and corrosion conditions to obtain accurate data on advanced magnesium alloys. Currently, the team is exploring the differing effects of high cycle vs. low cycle fatigue to more accurately understand the fatigue mechanism in the Mg alloys. Testing methods under controlled moisture conditions and for the effects of salt water corrosion on fatigue are under current development. The varied effects of heat treatment

on microstructure and performance are being investigated here at AU and elsewhere in the wider research effort.

Fan's research and modeling expertise is not limited to application in metals and alloys, he has also recently produced a 3-dimensional meso-electro-mechanical model for the description of PMN-PT-BT polycrystalline ceramic materials. Based on the constitutive behavior of single crystals, the model has shown good agreement with experiment (Journal of Intelligent Material systems and structures, 15 (3) 2004, 203-207).

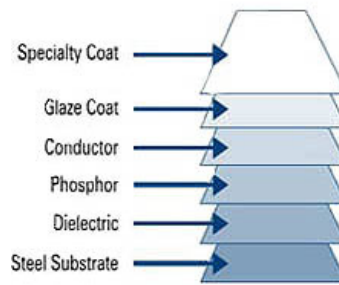
## Edwards works toward a bright future - electroCeramescent technology

Dr. Doreen Edwards, associate professor of Materials Science, has recently been awarded a patent for her work in the development of a new solid state lighting technology - ElectroCeramescent light. The new kind of solid-state light bulb, developed by team of inventors including Edwards, Richard Begley and Michael Norton (Marshall University), and Lewisburg (WVa)-based Meadow River Enterprises Inc. - is based on ceramic-coated steel panels.

A square foot of the new light panels consumes one-quarter of a watt,

says Don Osborne, president of Meadow River Enterprises. Researchers estimate the bulbs can emit their soft greenish light for 50,000 hour (or more than five years) without much maintenance.

The lights' low energy consumption and high durability make them ideal for outdoor use, such as for road signs or on maritime buoys. Their low energy needs make the panels ideal for integration into solar-powered systems for corporate signage applications.



A breakaway view of the solid-state ElectroCeramescent lighting panel reveals the complex materials technology. Overall thickness is 0.037-0.055"

Domestic uses are being developed - look for luminescent house numbers coming to a Wal-Mart near you!

## New York takes a lead in developing hydrogen economy

The School of Engineering at Alfred University is well-positioned to become a key participant in the development of New York's Hydrogen Economy - so learned CACT Director Dr. Vasantha Amarakoon at the recent New York State Hydrogen Energy Vision Workshop (Albany, NY, 14-15 December, 2004).

The workshop - sponsored by the NYS Energy Research and Development Authority (NYSERDA), the NY Power Authority (NYPA), and the Long Island Power Authority (LIPA) - brought together representatives from government, alternative and conventional electric power producers, industry and academia to collaborate on a vision for development of a hydrogen economy in New York State. The participants shared their perspectives and ideas on the technology, policy and market aspects of developing a hydrogen economy in New York State. AU, RPI, SUNY college of Environmental Science and forestry (Syracuse), SUNY Atmospheric Sciences Research Center (Albany), and SUNY Farmingdale academic research centers were represented.

New York State's existing resources can enable a rapid start to implementation. The greatest benefits to our environmental concerns and energy independence will be realized if hydrogen is primarily produced by renewable energy sources. New York is fortunate to have significant hydropower, wind power, and bioenergy resources.

Western New York industry is also in the forefront with practical technologies:

- Praxiar (Tonawanda) excess hydrogen generating capacity and decades of experience with handling and transporting large volumes of hydrogen.
- General Motors Fuel Center Activities Center (Honeoye Falls) development of hydrogen fuel cells for vehicles
- Delphi automotive Technical Center (Henrietta) DOE supported fuel cell program.
- Eastman Kodak (Rochester) and Harris RF Communications (Rochester) innovative portable power solutions for communications.

At AU, researchers in the School of Engineering are also making strides in enabling technologies

Dr. James Shelby and Dr. Matt Hall have received a large research grant from the Department of Energy for research regarding a novel method of high pressure storage of hydrogen gas in microscopic hollow glass microspheres, a technology offering the possibility of convenient, weight-saving, safe, inexpensive, room temperature, hydrogen storage systems.

Dr. Scott Misture conducts basic research and development of solid oxide fuel cell (SOFC) cathode perovskite-based ceramics, which ideally supports both electronic and ionic conduction and be catalytic for oxygen reduction.

Dr. Doreen Edwards investigates structure-processing-property relationships in electroceramic materials

using solid-state and solution processing with applications in SOFCs.

Dr. Xingwu Wang works on thin films for SOFCs, hybrid systems for PEM fuel cell power generators, and implantable fuel cells.

Dr. Alan Meier is a specialist in ceramic oxide joining, ceramic/metal joining, glass/metal joining and metal electroding - all necessary components of SOFC development.

Fuel cells will be the most efficient method of converting hydrogen into electricity for transportation or stationary power units, but requires practical distribution. GM has announced plans with Shell Hydrogen LLC to establish NY State's first hydrogen service station in 2006 in the New York City area.

According to Jeremy Bentham, Shell Hydrogen's CEO, "The only way the hydrogen economy will be realized is having not only fuel cell vehicles, but also convenient places to refuel and local communities that will support this transition to a new energy source. We're proud to be leading this effort in partnership with GM and applaud the state of New York for its efforts toward creating a sustainable future for all."

Proceedings of the Hydrogen Energy Vision workshop meeting are available at <http://www.energetics.com/nyhydrogen.html>, along with information on the upcoming New York State Hydrogen Energy Roadmapping Workshop to be held March 8-9, 2005 in Albany, NY.



### Alfred University School of Engineering

AU ENGINEERING NEWS IS AN ABBREVIATED VERSION OF OUR ON-LINE NEWSLETTER. FOR COMPLETE NEWS AND UPDATES, GO TO

<http://engineering.alfred.edu/newsletters/soe>

CONTACT US AT

AU SCHOOL OF ENGINEERING  
2 PINE STREET  
ALFRED, NEW YORK 14802-1296

EMAIL: [SOEENews@alfred.edu](mailto:SOEENews@alfred.edu)

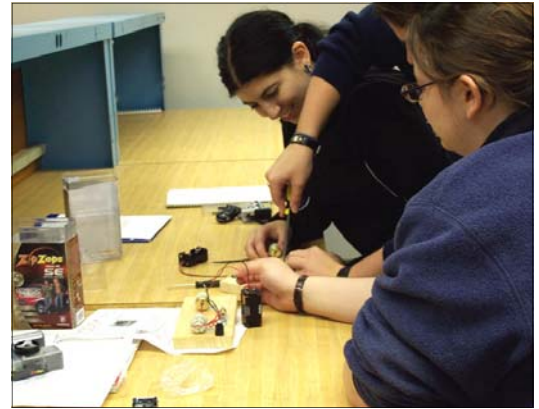
## Get excited about Science: its the 2005 Summer Institute!

AU's Summer Institute in Science and Engineering is a unique and exciting residential institute for high school sophomores and juniors interested in pursuing an education in science, math or engineering.

The number of participants is kept small to allow for individualized attention and optimal use of equipment; about 50 students will be accepted into the program this year.

Accepted applicants receive complete descriptions of labs and will select those in which they would like to participate. Labs are hands-on and are conducted by distinguished research faculty of the AU School of Engineering.

The institute fee is \$495\* (includes a \$75 deposit) that covers room and board, tuition, and recreational activities.



Summer Institute labs give hands-on experience - a real taste of the AU School of Engineering experience! (pictured here, Savannah Williams, Freshman EE, and Jennifer Winikus, Freshman EE/MSE in EED 100 Discoveries Lab)



### "SuperProbe" Microanalyzer and new high resolution SEM now on line

Mr. Ward Votava, consultant SEM specialist, enjoys the versatility of the new JXA-820 SuperProbe Electron Microanalyzer (EPMA) and Quanta 200 FEG Scanning Electron Microscope. For more information about analytical electron microscope capabilities in the School of engineering, contact Gerry Wynick ) or Dr. Paul Johnson.

## Faculty Briefs ...



Dr. Alastair Cormack, Dean of the AU School of Engineering and Van Derck Frechette Professor of Ceramic Science, presented the opening address at the 3rd National School for doctorate students in

"Materials Science Multiscale Molecular Simulations" Modena, 14-18 February 2004. His lecture was entitled "Computer Simulation of Ceramics."

Dr. Subrata Saha, Professor of Biomaterials, received a \$ 5000 grant from the Whitaker Foundation for organizing the 3rd International Conference on Ethical Issues in Biomedical Engineering, to be held in June of this year. This grant will be used to give student awards and travel grants for the students presenting papers at this conference.

Saha recently presented a talk on TMJ Implants at the Meenakshi Ammal Dental

College and a seminar "Bone as a Material: Engineering Challenges" at the Indian Institute of Technology, both at Chennai. Saha organized and chaired a session on Bioelectricity and Ion Channels at the 23rd Scientific Conference of the Society for Physical Regulation in Biology and Medicine (SPRBM) held at Lake Tahoe, January 12 to 14, 2005.



Dr. Alan H Goldstein, Fierer Chair of Biomaterials Engineering has been appointed by the National Research Council to a committee that will conduct an evaluation of the

National Nanotechnology Initiative. This committee will also perform a one-time assessment of the need for standards, guidelines, or strategies for ensuring the responsible development of nanotechnology. Goldstein's appointment to this panel is based on both the growing

success of Alfred's Biomedical Materials Engineering Science Program and his own popular articles on the science and ethics of nanotechnology. The current committee includes a distinguished membership that spans academia, industry, and the federal government.

Dr. Jim Shelby and Dr. Matt Hall presented the invited talk "Glass as an Enabling Material for the Hydrogen Economy" at the American Ceramic Society's Glass and Optical Materials Division (GOMD) meeting at Cape Canaveral, FL in November 2004.

Dr. Xingwu Wang and colleagues have recently published "Characterization of FeAlN thin films with nano-sized particles" (Ceramic Transactions Vol. 159: Ceramic Nanomaterials & Nanotechnology III).