

AU Engineering News

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Inside this issue

Student News

- Hejna receives McMahon award ... page 2
- Nickerson receives AF Research Award ... page 2
- Battle-bot "Grimace" competes ... page 3
- Students investigate Solar and Wind power ... page 3
- International students enliven SoE ... page 8

Program Updates

- Lancaster retires, Leigh named EE Chair ... page 4
- EE News, Computer Engineering Option ... page 4
- CE expands Distance learning ... page 4
- BMES BS degree has new website ... page 5
- Hall joins BMES faculty ... page 8

Research and Faculty News

- AU hosts Biomedical Engineering Conference ... page 6
- Jones, LaCourse receive Chancellor's Awards ... page 7
- Varner honored by ACerS and AU ... page 7
- Earl reports activities, NYSERDA grant ... page 7
- Faculty news in brief ... pages 6,7

Welcome to the AU School of Engineering A New Look for a New Century

From the Dean:

Welcome to the "new" School of Engineering, which opened its doors to business on the 1st July this year, the 103rd year of engineering at Alfred University.

Although the change in organizational structure will, in many ways, be transparent to most engineering students, it will greatly facilitate both the Admissions process and the broader efforts to market our engineering programs to the wider audience.

All engineering students will benefit from the additional synergies that will develop because of the closer relationships and co-operation between programs. Unified course scheduling, for example, will increase the choice of electives available to upper division undergraduates and some economy of effort (for the faculty) will come from having single school-wide seminars (freshmen will have their own section). We are also working towards some program rationalization, so that electrical engineering courses for non-EE's are taught by EE faculty, mechanics courses have ME instructors, materials courses are offered by MSE faculty and so on. This will allow us to recruit new faculty more efficiently, increasing the range of expertise available to our students.

The School of Engineering offers six undergraduate degree programs.

(Continued on page 5)



Dr. Alastair N. Cormack,
Interim Dean, AU School of
Engineering

AU hosts Biomedical Engineering Conference

October 31 - November 2, 2003

See story on page 6!

Kelly, CE '72, is 2003 McMahon Lecturer

Alfred University Alumnus William Kelly (CE '72) presented the annual John F. McMahon Memorial Lecture on October 9, in Harder Hall on the AU campus. In his talk, "Ceramic Engineers/Glass Scientists: A Business Perspective," Kelly, who is president and chief executive officer of Unifrax Corporation, headquartered in Niagara Falls, NY, explored one business model and his experiences in developing the "ceramic engineer/businessman skill set necessary to be successful in today's international business environment."

"Innovations in ceramics and glass science have enabled other scientific breakthroughs," explains Kelly. "The key to turning those



Mr. William Kelly

(Continued on page 5)

Hejna receives McMahon award for Coop Achievement

Elise L. Hejna (senior, MSE) received the McMahon Scholar Award for Coop Achievement at the McMahon award ceremony on October 9, 2003. Hejna was honored for her outstanding professional performance to PPG Industries, Meadville, PA, during her recent Coop experience. At PPG, Hejna worked with Tim Zahler, Tank superintendent, on a process analysis project.

The McMahon Scholar Award was established to honor the late John F. McMahon who always led the NYS College of Ceramics to consider the vital needs of industry while maintaining a strong academic tradition of fundamental research and education. The Award is presented annually to an undergraduate returning from Coop based on review of performance by their industry supervisor.



Pictured from left, Dr. Alastair Cormack, SoE Dean; Dr. James Shelby, Professor of Ceramic Engineering and John F. McMahon Professor; Elise Hejna, McMahon Scholar; and William P. Kelly, 2003 McMahon lecturer and award winner

Nickerson receives Air Force Research Award

ME graduate student, Seth Nickerson, recently received an award for best research project as an US Air Force Research Lab Space Scholar in Albuquerque, NM. His research project, funded by the Air Force, is on the topic of composite micro-crack mitigation and is titled "Thermal-Mechanical Failure Analysis of Composite Cryogenic Materials Using Multi-Continuum Theory," Nobel Laureate Dr. Steven Chu, from Stanford University, presented the award in August. Nickerson's advisor in Albuquerque was Dr. Jeffrey Walsh; Professor Steven Mayes is his research advisor at AU.

Nickerson presented a paper based on his award-winning work, at the American Institute for Aeronautics and Aerospace (AIAA) Space 2003 conference in Long Beach CA. The research is also related to his master's thesis research in mechanical engineering.



Seth Nickerson (ME graduate student), US Air Force Research Lab Space Scholar, accepts special service award for his research. Pictured, L-R, Dr. Scott Erwin, Nickerson, Colonel William McCasland, and Nobel Laureate Dr. Steven Chu.

Battle-Bot "Grimace" Team competes in St. Paul

"Grimace", a fighting robot designed and built as a mechanical and electrical engineering capstone senior project, is competing in the 120 lb weight class in a national "Battle-Bot" contest on October 25-26, 2003, at the St. Paul National Guard Armory in Saint Paul, Minnesota. Dustin Broderick (BS ME, '03), Bryan Crandall (BS ME, '03), and Pat Mancini (BS ME, '03) designed and built the robot; Dr. Jason Tang (Prof., EE) and Dr. Steve Mayes (Asst. Prof, ME) were project advisors. Joe Goodsell (senior, ME) is accompanying the team as photographer.

Battle-Bot competitions are an active and growing "sport," with a new Robot Fighting League (the RFL, www.botleague.com); many sanctioned events are held nationwide. AU's entry into this competition, MechWar 7, is one of only a few academic entries in a broad field.

"Grimace" was one - half financed by the students themselves; additional aid was from AU's Alfred Research Grants for Undergraduate studies program (ARGUS) and the Dresser-Rand Corporation. ARGUS grants are available to all AU students regardless of degree program.

AU Electrical Engineer Chad Lewis (BS EE, '03) is also part of the "Grimace" Team, contributing to the selection and integration of motors, control and remote communications components so necessary to the success in battle.



"Grimace" team (L-R): Dr. Steve Mayes, Bryan Crandall and Dustin Broderick.

Students Investigate Solar and Wind power

EE undergraduate and graduate students focus on renewable resources.

Kaream Brathwaite (senior, EE) has been looking into wind-based hybrid energy systems. The objective of his study is to configure an ideal stand-alone system that could satisfy the energy needs of a home economically and without reliance on grid.

Currently Alfred University operates a 10-kW wind turbine, the main component of the AU Renewable Energy Laboratory. Purchased through a NYSERDA grant. The turbine is mounted on a 120-ft high guyed tower located off SR 244 in Alfred. Its rotor is 23 ft in diameter. The turbine is

equipped with a GridTek10 inverter. The generator/inverter combination allows the turbine to generate power under a wide range of wind speeds by varying the output power level.

Brathwaite has already run a simulation and compiled a performance analysis for a stand-alone energy system comprised of a 1500 W wind turbine, a PV array of 1280 Watts, a 12 hp generator, and a 24 V battery bank. Access to the AU turbine, installed in late July 2003, will enable further development of his and other undergraduate researches into renewable power sources.

EE MS student Craig Phenes has been working on a renewables-based

home water heating system. The central focus of his research is to design a highly efficient home water heating unit that receives the bulk of its energy from solar panels and a wind turbine. The unit makes use of the grid power as an auxiliary source. Artificial Intelligence methods are employed to predict the demand for hot water and also adapt to the changes in the demand patterns.

Lancaster retires, Leigh named EE Chair

AU's Electrical Engineering ended its 2002-2003 year with a celebration honoring Dr. James Lancaster, who retired after 13 years as Division Chair. A dinner was organized by Jamie Wolff, Sean Senhouse and Alice Zebracki, with help from Dr. Xingwu Wang. The event was well attended by alumni. Alumni at the event included Mark Bilak, Brian Harpster, Dan Ondreyko,

Sean Senhouse, Scott Scheibner, Jamie Wolff, Alice Zebracki, Zain Horning, Ben Miller, John Oshetski, Kevin Berwald and Jared Sibley. The occasion was also used to raise funds for support of the freshman Discoveries lab.

Electrical Engineering welcomed Dr. Wallace B. Leigh as the new Program Chair. After his appointment was announced, Leigh remarked,

"This should be an interesting year as Electrical and Mechanical Engineering will be re-combined with [the School of] Ceramic Engineering [and Materials Science] to form a new School of Engineering. We have also been altered from Divisional to Program status in order to better benefit Engineering on Campus."

EE news: Computer Engineering Option Enhanced

Students in Alfred University's Electrical Engineering Program now get direct hardware design experience using the latest industry standard FPGA boards and development software. Recent acquisitions to the department include a Xilinx Spartan II-E FPGA prototyping board.

This new board is quite suitable for both undergraduate and advanced graduate projects as it features 300,000 logic gates, six channel video

and four channel stereo audio capacity, IDE hard disk or Compact Flash card compatibility and versatile interfaces for external interfacing (parallel and serial ports, USB 2.0 port, 10/100 Ethernet PHY layer). The FPGA board is programmed using an external PC to download an HDL (Hardware Description Language). Students gain familiarity with HDL's as a part of the departments VLSI (Very Large Scale Integration) design course.

These and other recent upgrades to available equipment allow AU Engineers in the Computer Engineering concentration option access to state-of-the-art design tools in chip design. The concentration, available for the past five years to EE majors, is slated for expansion to a full BS degree program in Computer Engineering in Fall 2004.

CE expands distance learning options

Distance learning continues to be an important way to deliver learning to our students. This semester (Fall 2003) SoE faculty are teaching nine courses to 25 remote learners in addition to a full complement of on-campus students.

Lectures are video taped and mailed over-night to the off-campus learners. Students in the classroom enjoy an unanticipated advantage arising from video taped lecture. A copy of each lecture is placed in

Scholes library, and on-campus students can use the tapes for review, or to make up classes missed for sport trips, illness or schedule conflicts.

Each course available for the distance learning option has an on-line component that includes access to documents and reference materials, discussion forums, e-mail, homework assignments and electronic submission of assignments, and an individual grade book that tracks learner progress. All students must

have access to the internet to take advantage of the on-line live components of our courses.

Any lecture course in the AU School of Engineering catalog can be delivered to remote students if sufficient interest arises. Please contact Paul Johnson, johnson@alfred.edu, with your interests. For a brochure, please contact Marlene Wightman, wightman@alfred.edu.

Welcome

(Continued from page 1)

Program chairs are:

Biomedical Materials Engineering
Science, Dr. Alan Goldstein.

Ceramic Engineering,
Dr. Paul F. Johnson.

Electrical Engineering,
Dr. Wallace B. Leigh (not
pictured).

Glass Engineering Science, Dr. James
E. Shelby.

Materials Science and Engineering, Dr.
Alan Meier.

Mechanical Engineering, Dr. Carlson C.
Pian.

Undergraduate Program Director
Dr. Steven M. Pilgrim.

Graduate Program Director Dr.
Doreen Edwards works with the
program chairs and the Dean to ensure
quality and consistency in all
engineering degree programs.

There is still much work to be
done in establishing appropriate
operating procedures for the School,
not in the least because it cuts across



Alan Gold-



Paul Johnson



Alan Meier



Jim Shelby



Carl Pian



Steve Pilgrim



Doreen Edwards

the traditional statutory - non
statutory "dividing lines". AU's public

and private sectors have developed
somewhat different habits that need to
be brought together in a way that
retains the best of both worlds: going
for the highest common denominator
rather than the lowest common factor.

We hope to see overall growth in
the research - sponsored research
continues to be a major opportunity to
attract additional resources into the
engineering programs. With continuing
cut-backs in the "traditional" revenue
streams, such as state support, finding
new revenue sources is one of our
more important challenges. Expanded
cross-disciplinary research can increase
our opportunities in securing important
new funding to expand both
undergraduate and graduate
opportunities.

Finally, I should note that a search
is underway for a permanent occupant
of the dean's office. If you know of any
outstanding candidates, please send
their names to Alan Goldstein, chair of
the search committee!

BMES BS degree goes online with a new website

The new BS degree program in
BMES is now online. Check out
www.bmes.alfred.edu where both a
brochure and complete curriculum are
available.

While there are many biomedical
engineering (BME) programs, Alfred
University has one of the few
biomaterials engineering programs in
the country. Application for ABET

accreditation for the new degree is
expected within two years; it may
become the first ABET-accredited
degree program in biomaterials
engineering.

McMahon lecture

(Continued from page 1)

innovations into exciting new opportu-
nities demands engineering skill and
business acumen."

Kelly has been president and CEO
of Unifrax, created from the North
American Fibers Division of the Car-
borundum Company since its founding
in 1996. Kelly joined Carborundum in

1972 and has served in various manu-
facturing and engineering positions in
North America and England.

Kelly is a Fellow of the American
Ceramic Society and a member of the
President's Council of Industrial Advi-
sors. He is president of the Refractory
Ceramic Fibers Coalition and a mem-
ber of the executive committee of the

Refractories Institute. He recently
received the Global Leadership Award
from Niagara University.

The McMahon Lecture Award is
presented annually by the School of
Engineering for outstanding achieve-
ment in the field of ceramic engineer-
ing.

AU hosts Biomedical Engineering Conference

Dr. Subrata Saha, Professor of Biomaterials is chairing a Conference October 31 - November 2, 2003 at Alfred University on Biomedical Engineering in New York. A conference designed to bring together bioengineers, clinicians and biomedical



Subrata Saha

industry. This conference is funded in part by a "Conversations in the Disciplines" grant through SUNY.

The conference opens Friday evening with a reception and student poster competition. There are approximately 20 posters submitted

for consideration.

Dr. Russell Bessette, Director of the New York State Office of Science, Technology and Academic Research (NYSTAR) will give the keynote address "The Future of Biomedical Engineering and the Empire State". The conference will

feature sessions on Biomedical Programs in New York, the Future of Biomedical Engineering: An Industrial Perspective, Tissue/Cellular Engineering, Biophysical Modeling, Biomaterials and Bioengineering Applications and Education.

There are 27 papers being offered. One of the highlights of the conference will be the banquet Saturday evening featuring speaker, Dr. Samuel Hulbert, President of the Rose Hulman Institute. His talk is entitled "The Status of Artificial Organs."

For more information on this event or future meetings on campus, please contact Marlene Wightman, Director, Continuing Education/Industrial Outreach. 607-871-2425 or wightman@alfred.edu.

Dr. Alastair N. Cormack, Interim Dean of the SoE and Van Dérck Frechette Professor of Ceramic Science was an invited speaker at the Annual General Meeting of CCP5, a UK consortium devoted to computer simulation of solids and supported by the Engineering and Physical Sciences Research Council, at the University of Cardiff, in September 2003.



Professor Jinghong Fan, associate professor of mechanical engineering presented a paper entitled, "A Multiscale Modeling Scheme of Cyclic Plasticity," at the PLASTICITY 2003 Conference, held in Quebec City, Canada, in mid-July.



Professor Steve Mayes, assistant professor mechanical engineering, presented a paper entitled, "Damage Initiation Mechanics and Failure Predictions in Fiber-Reinforced Composites," at the 14th International Conference on Composite Materials (ICCM-14). This prestigious conference is held every two years at locations all over the world. It has been held only twice in the U.S. and will be held in South Africa in 2005.



Dr. Dave Pye, professor of glass science (emeritus), gave the opening plenary lecture at the XXth Physics of Non-Crystalline Solids meeting, Parma, Italy (July 2003). Dr. Alastair N. Cormack was one of the invited speakers at that meeting.



Jones, LaCourse receive Chancellor's Awards

Dr. Linda Jones, professor of ceramic engineering and science, and Dr. Bill LaCourse, professor of glass science, each received the SUNY Chancellor's Research Recognition Award at a dinner honoring

researchers in Humanities, Arts and Social Sciences, Science, Medicine and Engineering that took place on October 20, 2003, at the State University Plaza in Albany.



Linda Jones



Bill LaCourse

Varner honored by ACerS and AU

Dr. James R Varner, professor of ceramic engineering, has been especially busy. In April, he was named a Fellow of the American Ceramic Society. Varner also received the Joseph Kruson Faculty Award for Distinguished Service to Alfred University and was designated a Kruson Distinguished Professor.



Jim Varner

Varner was invited to talk about "Applications of Fractography" at the meeting Glas im Automobil II in Essen, Germany in May. Also in May, he was a session chair at the Annual Meeting of the Deutsche Glastechnische Gesellschaft (German Society of Glass Technology).

Varner presented a number of short courses, both on campus and off. He was invited to present a one-day short course on "Failure Analysis of Glass" in

connection with the Glass Processing Days conference in Tampere, Finland in June. Together with George Quinn from NIST, he gave our short course on "Failure Analysis of Brittle Materials" in Alfred in June. In August, Varner presented a two-day in-house short course on "Failure Analysis of Glass" at Visteon in Dearborn, MI. (Varner and Quinn teach the short course "Fracture analysis of Glass and Ceramics" on AU campus each summer.)

Earl reports recent activities, new grant

Recently, Dr. David Earl, assistant professor, ceramic engineering and materials science, provided an on-site industrial short course titled Statistical Methods for Industrial Problem Solving for BWX Technologies, in Lynchburg, VA.

More recently, Earl and Mushtaq Ahmed (MS CE, '03) were awarded the 2003 John Marquis Memorial Award at the fall conference of the ACerS Ceramic Manufacturers Association meeting in Mansfield, OH. The annual award is presented by the American



David Earl

Ceramic Society Materials and Whitewares division for the published paper of "greatest value to the members and to the industry". The paper is "Characterization of Glaze Melting Behavior with Hot-Stage Microscopy," Ceramic Bulletin, 81 (3) 47-51 (2002). Earl also won the Marquis award in 2000.

Earl has accepted an invitation to join the Technical Program Committee for the 4th World Congress on Microwave and Radio Frequency Applications, scheduled for November 2004 in Austin,

Texas. Please contact earlda@alfred.edu for more information.

Earl also was recently awarded \$257,000 by NYSERDA and Refractron for a project that will fund a master's degree student in ceramic engineering. The goal is to reduce energy requirements for firing porous ceramics through the development of a lower temperature sintering aid. Refractron, a company located in Newark, NY, produces a range of porous alumina, zirconia and silicon carbide ceramic products, including membrane and monolithic tubes, discs, and plates.

Professor Carlson Pian, professor of mechanical engineering, presented a paper entitled, "High-Temperature Air-Blown Gasification of Willow Wood for Energy Production," at the International Energy Conversion Engineering Conference, held in Portsmouth, VA, in late August.



Hall joins BMES faculty

We are pleased to announce that Dr. Matt Hall has been hired as an assistant professor of biomaterials and glass science.

Hall's current research interests include the use of



Matt Hall

sol-gel glasses for developing bioactive materials, controlled-porosity materials, and hermetic seals. In addition, he is beginning to investigate the use of sonochemical processing methods for materials synthesis.

These materials have important applications in areas such as scaffolds for tissue engineering, biomimetic implants, and biosensors.

International students enliven School of Engineering

Alfred University's School of Engineering is hosting six students this semester in its materials-related programs: three from Germany (Universitaet Erlangen-Nuernberg), two from France (ENSCI, Limoges), and one from England (Univ. of Sheffield). Christian Bienert, Johannes Schadock, and Fabian Rosenberger, from Germany, will be here for the entire year. Charles Maury and Bruno Chabas (France); and Owen Arnold (England) will be on campus for the Fall semester only.

Four Engineering students participated in AU Study Abroad last spring semester: Ryan Elliott (BS MSE, '03) in Germany and Jake Amoroso (senior, GES), Michael Nicholas (senior, CE), and Logan Quist-Chaffee (senior, CE) in England.

The Study Abroad program is available to all AU students. Within the AU School of Engineering, the CE, GES and MSE programs currently have arrangements with ceramic engineering and materials science programs abroad so students can

spend a semester away without worrying about falling behind in their degree requirements. The SoE's Study Abroad Committee is working toward similar arrangements for BMES, EE and ME programs.

Students usually spend the spring semester of their junior year abroad. Students in good academic standing (GPA of 2.5 or with permission from the Dean) are eligible to participate in the program.

Alfred University School of Engineering

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CONTACT US AT

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

EMAIL: SOENEWS@ALFRED.EDU