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Engineering Mechanics Department Newsletter -- Winter 2004

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Department of

Engineering Mechanics

University of Nebraska-Lincoln

Winter 2004

Engineering Mechanics Hosts National Conference

K. R. Rajagopal of Texas A&M (above) and S. Torquato of Princeton (right) were recipients of the Eringen and Prager medals, respectively,

The Engineering Mechanics Department hosted the 41st Technical Meeting of the Society of Engineering Science from October 10-13, 2004 in Lincoln. Over 350 researchers from throughout the world converged on Lincoln during this time. The conference, chaired by Engineering Dean David Allen and EM Professors Yuris Dzenis and Joseph Turner, took place at the Burnham-Yates Conference Center at the Cornhusker Hotel. "This conference was a great opportunity for us to showcase the high-quality research being performed by our faculty, staff, and students," said Turner, "Our selection as host is testimony to the growing reputation of the department." All EM faculty and many graduate students worked together to organize symposia, chair sessions and assist with all aspects of the conference. One mission of SES is to foster and promote the interchange of ideas and information among the various fields of engineering science and the fields of theoretical and applied physics, chemistry, mathematics, bioengineering and related scientific and engineering fields. More details about the conference may be found on the web (http://www.nuengr.unl.edu/ses2004/).

UNL Chancellor Perlman (left) and Engineering Dean Allen (right) make opening remarks.

Dzenis Awarded McBroom Professorship

Dr. Yuris Dzenis was recently awarded the McBroom Professorship in Engineering in recognition of his outstanding contributions to the EM missions of teaching, research, and service. Dzenis joined EM in 1994 and his research interests are in the areas of: novel nanoscale and nanostructured materials; polymer, carbon, and ceramic nanofibers; electrohydrodynamics of the electrospinning process; advanced composite materials and nanocomposites; damage and fracture mechanics and intelligent nondestructive evaluation of materials; fatigue mechanics. Dzenis' research on the manufacturing of nanofibers is of international acclaim. "Continuous polymer, carbon, and ceramic nanofibers are expected to have critical advantages for biomedical applications, sensors, actuators/transducers, advanced composites, next generation electronics, agricultural and environmental applications, the chemical industry and energy conversion, space applications and many others," Dzenis said. Dzenis is very grateful of the generosity of the McBroom family.

Robert C. McBroom grew up in Superior, Nebraska. He graduated from UNL in 1948 earning a BS in Electrical Engineering, serving in WWII prior to completion of his degree. He was a lifelong General Electric employee working in several different areas. His initial work at GE was focused on the development of a trigger mechanism for the atomic bomb, while later work included the development of a new dental x-ray machine. Robert established the R. Vernon McBroom Fund in 1995 to "recognize his father who worked at the local Chamber of Commerce." The McBroom's 53-year history of giving to the University of Nebraska has had a significant impact on the College of Engineering especially in the creation of the fund to award the Robert C. McBroom Professorship.

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University of Nebraska Lincoln

EM Faculty News

Bancroft Hall; Home to EM 1941- 1996

People of EM

Department Chair
Joseph A. Turner

Faculty
David Allen
Eveline Baesu
Florin Bobaru
Yuris Dzenis
Ruqiang Feng
Jiangyu Li
Mehrdad Negahban
Jiashi Yang

Postdoc/Scholars
Yongkui Wen
Xiangfa Wu
Liyong Yang

Emeriti Faculty
Millard Beatty
Seh-Ieh Chou
David Cook
Richard DeLorm
Leendert Kersten
Robert McDougal
Wayne Martin
Joseph Panarelli
Yen-Ching Pao
Donald Pierce
Lyle Young

Support Staff
Kathie Hiatt
Amy Fisher

Nebraska Hall; Home to EM 1996 - present

Research Interests of Faculty

Since the department faculty have changed significantly in the last 10 years, below is an update of our current faculty, including the year they started and their current research interests.

David Allen (2003)

Contiuum mechanics; damage mechanics; viscoelasticity; modeling fracture in a variety of solids including asphalt and armor.

Eveline Baesu (1998)

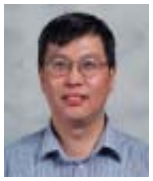
Continuum mechanics, piezoelectric materials, mechanics of fiber networks, plasticity, mechanics of living cells.

Florin Bobaru (2001)

Meshfree methods for damage and fracture, computational models of nanostructured materials, shape and material optimization, optimization of functionally graded materials, optimization in biological systems and computational biomimetics, multiscale methods.

Yuris Dzenis (1994)

Novel nanoscale and nanostructured materials; polymer, carbon, and ceramic nanofibers; electrohydrodynamics of electrospinning process; advanced composite materials and nanocomposites; damage and fracture mechanics and intelligent nondestructive evaluation of materials; fatigue mechanics.



Ruqiang Feng (1997)

Experimental and computational mechanics of materials; Inelastic deformation, damage and failure mechanisms of solids, high strain rate and shock wave phenomena, rheology of polymers and polymer compounds, surface mechanics and tribology (friction and wear), polycrystal modeling and simulations, and hybrid atomistic-continuum modeling and simulations of materials and material systems.

Jiangyu Li (2001)

Active materials, composites, micromechanics, microstructure mechanics.

Mehrdad Negahban (1989)

Theoretical, computational, and experimental studies to characterize large deformation thermo-mechanical response of materials, in particular polymers; effects of crystallization on the mechanical behavior of polymers under large deformations; effects of crystallization on failure; manufacturing of thin film extruded polymers.

Joseph Turner (1997)

Theoretical, numerical, and experimental studies of wave propagation through heterogeneous media for materials characterization and NDE with applications to metals, composites, ceramics, concrete, and geophysical materials; nanoscale materials characterization using nanoindentation and atomic force microscopy.

Jiashi Yang (1997)

Electromechanical materials and devices.

Accolades

Engineering Mechanics was the recipient of the Holling Family Departmental Teaching Award for outstanding achievement, May 2003.

EM Faculty Earn College Awards

Engineering Mechanics Faculty received several awards from the College of Engineering and Technology at a reception held April 29, 2004. Winners received certificates and stipends in recognition of their efforts. Honorees included: Eveline Baesu (Faculty Service Award, Assistant Professor); Florin Bobaru (Henry Y. Kleinkauf Family Distinguished New Faculty Teaching Award); Yuris Dzenis (Faculty Research and Creativity Award, Professor); Joseph Turner (Faculty Research and Creativity Award, Associate Professor).

EM Blackshirts

This year EM started a new graduate program tradition in order to recognize the academic achievements of our PhD students. All PhD students that have passed their qualifying examination (QE) will now be designated as "Engineering Mechanics Blackshirts" and given a black polo shirt with an Engineering Mechanics insignia. As all true Husker fans know, this phrase comes from our friends in the football program in which only the toughest, most aggressive defensive players are given such a designation. Such a name for our PhD students that have surpassed the QE milestone is appropriate since they have shown that they are some of the toughest minds on campus. Although other friends of EM may purchase shirts in different colors, black will be available only to those with a PhD from EM.

EM Polo shirts available for purchase. Send check or money order (made out to the University of Nebraska) for $25 to Amy Fisher, Engineering Mechanics, W317.4 NH, UNL, Lincoln, NE 68588. With your order, please indicate size and color (black or red; if black, note year of PhD degree).

EM Mourns the Loss of Two Emeriti

Ralph Ekstrom 1923-2003

Ralph Ekstrom died on January 9, 2003 at the age of 80 after battling a neurological disease. Esktrom received B.S. and M.A. degrees from the University of Missouri; M.S. degrees from Purdue and MIT and a PhD from the University of Florida. He began his appointment at UNL in 1961. He was department chair from 1983 to 1989 and retired in 1993. Ekstrom was very popular among students, said Mehrdad Negahban. "He had a wonderful personality," Negahban said, "Very easy to approach, very easy to talk to, always a fatherly figure." Ekstrom was a mentor to younger professors as well, Negahban said. In order to honor Dr. Ekstrom's dedication to Engineering Mechanics education, the Ekstrom family has established the Ralph E. Ekstrom Ph.D. Excellence in Teaching Award. For information on contributing, see the end of this newsletter.

Walter Erbach 1919-2003

Walter Erbach died on October 15, 2003 from a West Nile virus infection. He was 84. Erbach received engineering degrees from the University of Wisconsin and University of Nebraska and taught at UNL for 37 years, retiring in 1984. He had a variety of outside interests as well including traveling, woodworking, photography, and creating model airplanes. He was a charter member of the Prairie Astronomy Club of Lincoln and received numerous awards for his stereographic photography and model airplanes. Erbach's family has established the Erbach scholarship fund through the University Lutheran Chapel.

What's new with you? Let us know!

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e-mail: khatt2@unl.edu; or find this form on the Web at http://www.unl.edu/emhome/

Today's Date: _____

Name: _____

Degree/Major/Year _____

E-mail Address: _____

Home Address: _____

Employer: _____

Business Title: _____

Business Address: _____

What's New _____

_____

Emrah Gokdag, (MS 2001) is pictured here performing with a Turkish Folk Dance Group at the Dallas State Festival. Emrah is currently a PhD Candidate at the University of Houston.

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    - ❑ Ralph E. Ekstrom, Ph.D. Excellence in Teaching Award (#8045)
    - ❑ Gerald Max Smith Fund - graduate student support (#4952)
- ❑ My/Our check, made payable to the **University of Nebraska Foundation** is enclosed.
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  Signature _____ Date _____
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  (Contact your human resources department for a matching gift form.)

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  Address_____

  City_____State_____Zip_____

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100 Years of EM

Dr. Richard DeLorm has agreed to chronicle the first century of EM at UNL. Please send contributions (photos, stories, documents, etc.) to the department. More details in the next newsletter.