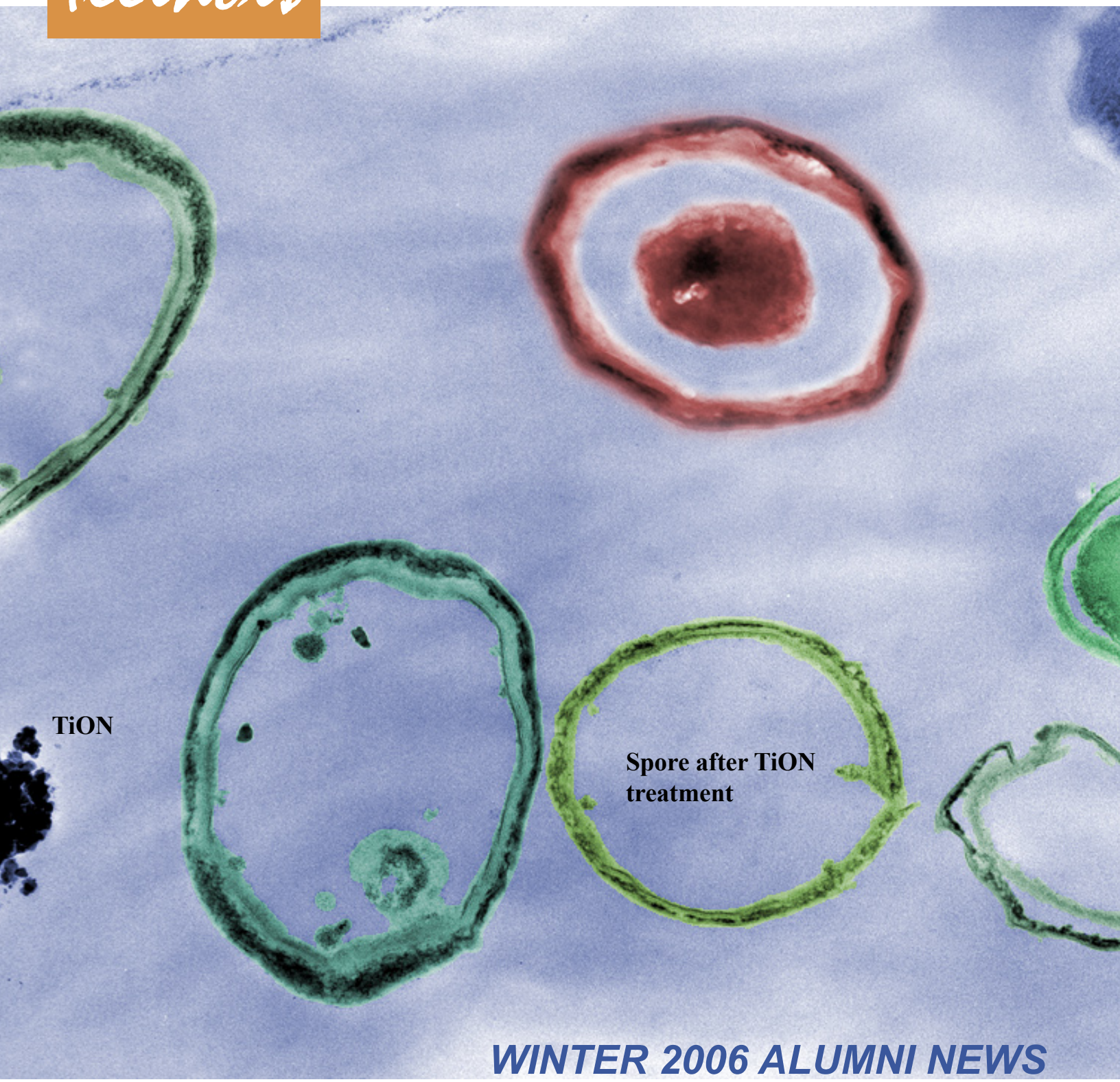
MatSE Illinois

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Department of Materials Science and Engineering



WINTER 2006 ALUMNI NEWS

Developing new antimicrobial materials
Celebrating alumni and student achievements

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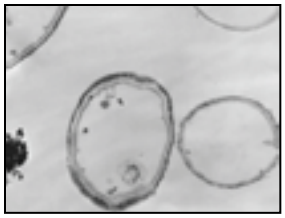
On the Cover



New TiON antimicrobial materials attack cell walls and kill spores. *Image courtesy of Jian-Ku Shang; article on page 4.*

Published twice annually by the University of Illinois Department of Materials Science and Engineering for its alumni, faculty and friends. All ideas expressed in *Materials Science & Engineering Alumni News* are those of the authors or editor and do not necessarily reflect the official position of either the alumni or the Department of Materials Science and Engineering at the University of Illinois.

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From the Head

Dear friends:

The fall semester like all the others is drawing rapidly to a close when it seems it should just be beginning. We welcomed seventy freshmen into our program this year, establishing new records for largest incoming class and total number of students in the program. The increase in numbers was not at the expense of quality; the 2006 incoming class is just as impressive as in past years. When I met the freshmen this year, I was surprised how many already have family ties to the University and to our old Metallurgical and Ceramics Departments. We now have three successive generations coming through the program. A consequence of the increase in our undergraduate population is that we must expand our undergraduate laboratory facilities and move some of the laboratories from the Kiln House to the first floor of the Ceramics Building. This is causing a minor problem, but it is a great one to have.

We have another new faculty member to introduce to you – Nancy Sottos. Nancy is a long-term member of the faculty of the College of Engineering and was until recently a member of the Department of Theoretical and Applied Mechanics. With Nancy joining us, we expand our expertise in soft matter to include deformation and failure of advanced polymeric composites and thin films as well as development of autonomic systems. Look for more about Nancy in future issues. One of the highlights of the fall semester was the investiture of Jim Economy as a Founder Professor of Engineering. This recognition was for Jim's contribution to polymer science and engineering and also for his work in laying the groundwork for making our department what it is today. Another was Paul Braun being named a University Scholar. This is the highest recognition the University gives to a young faculty member and it says a great deal about the quality of Paul's work.

Research funding through the department is increasing and I anticipate this will continue in the coming year. The faculty is initiating new programs in the areas of materials for energy systems, with efforts on hydrogen storage materials for automotive applications, hydrogen delivery systems, structural materials for the next generation of nuclear reactors, for improving the efficiency and reducing the costs of photovoltaic systems, and for producing fuels from biomass. Our faculty members are also active in developing new technologies to ensure that we have a safe and plentiful supply of water for our future. There are several initiatives related to health care that range from development of enabling technologies on targeted drug delivery systems to killing bacteria. The cover page and a short article inside this issue describe the exciting developments in Jian-Ku Shang's laboratory. The breadth and quality of the research work that is being conducted in the department continues to astound me – just take a look at the faculty web pages which you can access through the department home page and see for yourself.

Your buildings on campus are changing and over the Christmas break we will renovate the hallway on the second floor of the Materials Science and Engineering Building. Yes, we really are going to remove the flooring after only forty or so years of service. I know this will surprise some of you, especially as you recollect how many times you walked over that brown surface and thought how nice it looked.

Ian Robertson

You and your fellow alumni continue to provide support to your department and, on behalf of all the students, staff and faculty, I want to thank you for your generosity. Your response to our establishing the Birnbaum Lecture Fund has been tremendous. A symposium was held in the spring to mark the start of the lecture series. The symposium was attended by about fifty people, who came to reminisce and to tell about exciting developments in hydrogen research. It was a great event. In November, we held the first lecture in the series and Nate Lewis from Cal Tech presented a lecture on energy issues. It was a thought-provoking talk about what really needs to be done to ensure future energy supplies for the nation. Thank you for making this possible.

If you live in or around the Chicago area, I would like to encourage you to visit with department representatives at the Chicago Area Alumni Reception on March 29, 2007. If you cannot make this event and you have questions or concerns about the department, please contact me directly. As always, if your travels take you near campus, I hope you will take the time to come see how your department is growing and changing.

Ian M. Robertson
Willett Professor and Department Head

Researching TiON advanced antimicrobial materials

Bacillus endospores pose a great potential threat to national security and individual health because of their high mortality rate and fast transmission rate. They are among the most resistant living structures as they can survive harsh treatments that destroy most other bacteria, including the bacteria that form the spores. Spores are so hard to kill that few treatment options are currently available, such as gamma ray irradiation and toxic chemical disinfection. However, most of these methods are not only destructive to spores but also present serious health hazards to humans.

The research group led by Professor Jian-Ku Shang is developing new antimicrobial materials that oxidize organic and biological molecules by generating highly reactive hydroxyl radicals from a visible-light activated photocatalytic process. The initial design of the materials was based on heavy doping of titanium oxide by atomic nitrogen to promote absorption of visible light by titanium oxide. The resulting TiON materials have demonstrated visible-light photocatalytic activity in degrading organics such as benzene and bacteria. However, attempts to kill spores using nitrogen-doped titanium oxides were unsuccessful because of weak photocatalytic activity of the photocatalyst. Subsequently, Shang's group discovered a series of codopants which greatly improve the photo-oxidative activity of the TiON materials. Upon visible-light illumination, these codoped TiON materials have shown rapid killing of *E-coli*, *pseudomonas aeruginosa*, *staphylococcus aureus*, and *Bacillus subtilis* spores by inflicting oxidative damage on cell walls and spore coats.

The new antimicrobial materials are being tested for a number of potential applications. As part of the National Science Foundation sponsored Science and Technology Center of Advanced Materials for Water Purification with Systems, Shang's group is working with the Metropolitan Water Reclamation District of Chicago to investigate disinfection of waste water using TiON antimicrobial materials.

Jian-Ku Shang

In partnership with the medical staff at the Carle Foundation Hospital, Shang's group is also exploring medical uses of TiON antimicrobials in control of hospital infections, the third leading cause of deaths in the United States. Aside from antimicrobial applications, new TiON materials are poised to displace two existing technologies based on ultraviolet light and titanium dioxide, namely the Lennox PureAir™ air purification system (introduced in 2002), and the self-cleaning glass by the Pilkington and PPG (2001).

High school physics class visits MatSE

The Paxton-Buckley-Loda High School physics class visited the MatSE Department in October to learn more about the field of materials science and engineering. Professor Paul Braun, pictured in the back row, and his graduate student Erik Nelson gave an overview of MatSE and presented multiple materials-related demonstrations including superconductivity, new biomaterials, nanotechnology, shape memory alloys, and fiber optics. There were many questions during the presentation, as always, and it was clear the students found the MatSE demos to be the highlight of their trip to the University of Illinois.

2006 Alumni Awards

Distinguished Merit Award
Gene Haertling
(MS Cer '60, PhD Cer '61)

Following graduation, Gene Haertling joined Sandia Laboratories in Albuquerque, New Mexico, where he held both staff and managerial positions in the areas of research and development. During this time he developed the PLZT ceramics which are now used in both military and commercial applications. This development challenged him to form his own company, Optoceram, Inc., which was engaged in the development and manufacture of high quality electronic and electrooptic ceramics. He subsequently sold the company to Motorola where he served in the positions of Vice-President of the Technical Staff and manager of the ceramic research group, developing piezoelectric ceramics for speaker and medical applications and low-loss filter materials for cellular phones. Moving on to teaching, Haertling joined Clemson University in 1987 where he developed the RAINBOW ceramic actuators. He is a member of the National Academy of Engineers, a Distinguished Life Member of the American Ceramic Society, and a Fellow of IEEE. He has published 86 technical papers, 3 book chapters, and is a co-holder of 12 patents. Now retired from professional activities, he is located in Albuquerque.

Loyalty Award
Ron Larson
(BS Met '58)

Ron Larson started out in Sundstrand Aviation in Rockford, Illinois, where he did production metallurgy and was group supervisor. Then he worked at Howard Foundry in Chicago as investment foundry manager. In 1969, he joined the Chicago Magnesium Casting Company, where he was quality control manager. He was promoted to general manager and in 1977 became president and co-owner of the company. Larson sold the company and retired in 1997. Chicago Magnesium Casting Company is a major supplier of precision aluminum and magnesium sand castings to the aerospace industry. The castings are used for the Apache helicopter, all Boeing commercial aircraft, and the military (including B-1 bomber and F-4 and F-16 fighters). He and his wife Pam have 3 sons and 6 grandchildren. He is a lifetime member of the University of Illinois Alumni Association and a member of the University of Illinois President's Council and the MatSE Senior Advisory Committee. He also belongs to the Kiwanis Club and is a volunteer driver for the American Cancer Society.

Young Alumnus Award
Sherry Morissette
(PhD MatSE '99)

Sherry Morissette is currently a Group Leader/Senior Scientist in the Pharmaceutical Development department at Transform Pharmaceuticals, a Johnson and Johnson Company located in Lexington, MA. Her group is focused on formulation and process development for new chemical entities. Previously at Transform, she was responsible for the development and application of high-throughput technologies for solid form exploration and characterization. Prior to joining Transform, she worked as a post-doctoral research fellow at the Massachusetts Institute of Technology, where she carried out research in the Materials Science and Engineering Department as part of Professor Michael Cima's research group. She obtained her Ph.D. degree in Materials Science and Engineering with a specialization in colloidal science, under the supervision of Professor Jennifer Lewis. Morissette has published more than 20 publications and patents within the areas of colloidal processing, near-net shape fabrication techniques, rheological characterization of complex fluids, and high-throughput crystallization and formulation systems and applications. She is a member of several Research Societies, among them are ACS, MRS, AAPS, and the Society of Rheology.

2006-2007 Student Awards

3M Polymer Materials Scholars: Meena Babu, Laura Cote, David Hoying
A. I. Andrews Scholars: Matthew Duch, Michael Odlyzko, Steven Wisel
Paul A. Beck Scholar: Samik Basu
Harry J. Beckemeyer Jr. Scholar: Jessica Koschmeder
Clifton G. Bergeron Scholars: Amanda Pirih, Natalie Smith
Louis R. Berner Scholars: Daniel Krogstad, Matthew Montgomery
Robert Bohl Scholars: Ting-Kai Chang, Po Shan Hsu, Joseph Kao, Simeon Sevandal, John Tolar, Daniel Widing
Caterpillar Scholars: Bradley Norkewicz, Ruoshi Sun
Earl J. Eckel Scholars: Patrick Coyle, Daniel Lossie, Marie Mayer
M. Laird & Charisann Froberg Scholars: Scott Cronin, Jonathan Lelah
Henry E. Grein Jr. Scholar: Matthew Hardy
Kimberly Clark Scholars: Stephen House, Stephen Kaun
MatSE Industrial Scholar: Jonathan McDaniel
Kevin Moore Memorial Scholar: Courtney Skinner
James A. Nelson Scholar: Jason Jewell
Cullen W. Parmelee Scholars: Tracey Brommer, Nicole Cieslak, Kevin Dammann, Clarabelle DeVries, Gerald Marchand, Arya Tedjasaputra, James Young
Norman L. Peterson Scholar: Jacob Dolezal
Larry D. and Carol Rakers Scholar: Robert Ronald
Lucille and Charles Wert Scholars: Daner Abdula, Robert Bierman, William Buniak, Ashley Emmons, Jennifer Gaddis, Ameena Husain, Brian Malone, Nicholas Vito, Erica Vurpillat, Kyle Wallenberg, Pamela Wojtulewicz
Alfred W. Allen Awards: Kevin Dammann, Clarabelle DeVries, Jessica Koschmeder, Jonathan Lelah, Gerald Marchand, Arya Tedjasaputra
Arthur L. Friedberg Awards: Meena Babu, Daniel Shoemaker, Kyle Wilcoxen, Julie Wong
Materials Science and Engineering Alumni Board Award: Kate Jakubas

Student Spotlight: Laura Cote


Laura Cote

I chose the University of Illinois because it was in-state and has a strong engineering program. I have really enjoyed my experience here so far. The department is very supportive of its students and provides many opportunities outside of the classroom to get involved and learn.

In the summer of 2005, I participated in the Research Experience for Undergrads at MIT where I was able to select my research project. I chose to work on observing block-copolymer self assembly under specific conditions. I enjoyed the experience because I got to see for the first time many areas of research and characterization techniques. I worked first-hand with a SEM and AFM, which was challenging and exciting.

After my summer at MIT, I was really enthusiastic about participating in research here. I contacted Prof. Lewis and she welcomed me onto her team to help in a grad student's research. I was able to further add to my research skills and learn something new. I worked on the biomimetic silification of a polyamide ink. The basic idea is turning a soft organic material into a hard ceramic at ambient temperatures.

continued on next page

Kimberly-Clark Scholars

Michael Daley (BS MET '92, PHD MATSE '96), center, with 2006-07 Kimberly-Clark Scholarship recipients Stephen Kaun and Stephen House. Daley is the Director of Skin Care and Treatment at Kimberly-Clark Corporation, which is part of the Innovation Center-North Atlantic group. Kaun is from New Lenox, IL, and House is from Arlington Heights, IL; both are juniors in MatSE.

I received the Intel Undergraduate Research Scholarship where I presented a poster about the results of the research I conducted.

This summer I found out what it is like to work at a lab in industry when I was a research assistant at the General Electric Global Research Center. There the research topics were more orientated toward a specific application in industry. I worked on making and testing carbon fabric composites for the aircraft division.

"The scholarships I've received have been a nice recognition of my academic efforts and my parents have appreciated them as well."

-Laura Cote

As a member of the Engineering Outreach Society at the University of Illinois, I am teaching third and fourth graders about science. Once a week, we attend the same classroom for an hour and help the kids with hands-on projects. For example, we did chromatography with markers, made bridges out of pasta, made paper airplanes and talked about the science behind why these things do what they do or how they work. In the spring semester, the kids make an Engineering Open House project with our help. Last year we did one on volcanoes and the third and fourth graders tried to make a structure that would prevent lava from getting to their plastic house. It's a fun experience and the kids really enjoy the break from their normal day to see us.

I'm thinking of going to graduate school, but I'm not entirely sure if that is what I want to do. In the long run, I plan to continue to use my technical background in the workplace, most likely in a research environment. In my spare time, I enjoy doing Pilates to stay fit and take a break from schoolwork. I also like to bake, especially chocolate chip cookies.

Student Spotlight: Dan Krogstad

I am from the Chicago suburbs and the University of Illinois was the obvious choice due to its great academics, location, and cost. I am really glad that I chose MatSE because I love the size of the department. There are enough people where I could meet plenty of good friends, and yet small enough where I feel like I know most of the faculty and upperclassman at least.

Dan Krogstad in England

I have had some great international experiences while I have been here. I had an amazing time while I was studying in Australia. It was a really good experience because not only did I learn about how other countries view engineering, but how other people view life as a whole. I also did an REU program in Bristol, England, this past summer. This was a great opportunity to run my own research project. It was interesting to see the facilities that other countries have and to learn a little bit about the school system in England. They were both amazing experiences and I would definitely recommend that all MatSE students should try and go abroad at some point during their time at Illinois.

I am graduating in December and plan on entering a Ph.D. program next fall. Until then, I want to intern at a company so that I will be sure I want to do research in grad school and after.

"If I hadn't been offered a scholarship my freshman year, I might not have applied to MatSE. Scholarships have also allowed me to go on my international trips; studying abroad can cost a lot and any little bit helps a lot."

-Dan Krogstad

I have joined a few organizations while I've been in college, some have been academic-related and some have been just for fun. As President of Keramos, it has been my goal and the goal of the other officers to recreate the identity of the honor society, to provide services to the department and the other students, and to have fun along the way. We have started some new programs to help students with their classwork and are working to actively recruit students from high schools around the state into materials science. We are also trying to get speakers from all areas of materials science to come and talk at some of our meetings. *Find out more about Keramos at http://keramos.mse.uiuc.edu.*

I'm a member of UMO and Engineers Without Borders. Last year I worked on a year-long project designing and building a small wind turbine. We made our own blades and generator and are currently trying to get the design approved and the turbine raised somewhere on the engineering campus. (If anybody knows a professional engineer that would be interested in looking over our design, they should let me know.) I have also been very involved in two other organizations; the water polo team and Outdoor Adventure Club (OAC). The water polo team travels around the Big Ten to play in tournaments in the fall. It's a great way to stay active and to meet a group of people that are not engineers. Every year I go whitewater rafting with OAC in West Virginia and, when I have time, I try to do some other activities like camping, rock climbing and skiing.

Larry Rakers

Robert Ronald

Rakers Scholarship

The Rakers Scholarship Fund is a new scholarship established by Larry Rakers (BS MET '85, MS MET '88) and his wife Carol. Following graduation, Rakers went to work for Honeywell as a process engineer in the Electro-Optics Division. In his position, he worked on making infrared detectors out of II-VI semiconductors (HgCdTe) for military applications. After a few years, he moved into project engineering, and Honeywell funded his MBA from Northeastern University so that he could take on a managerial role. Following his MBA, Rakers switched careers and took a position with Fidelity Investments as a research analyst where he studied companies and made stock recommendations. During his early career at Fidelity, he covered natural resource and technology companies and managed several different mutual funds. In early 2002, he moved to the Fidelity Balanced Fund, which has a 5-star rating from Morningstar and has over $20 billion in assets.

Rakers decided to fund a scholarship because when he was an undergraduate (1981-1985) he received a scholarship. "At the time, money was tight and while the scholarship was not a large sum, it was instrumental in my ability to attend the University of Illinois," Rakers said. "I established the Rakers Scholarship, funded with an endowment, as a way of repaying the department for the scholarship and the excellent education I received. While I don't use the formal materials science training on a daily basis anymore, the way I think and reason was developed at the University of Illinois."

Larry and Carol have three daughters: Sarah, 11, Emily, 8, and Samantha, 5. The Rakers family lives in Wilmington, MA.

The first recipient of the Larry and Carol Rakers Scholarship is Robert Ronald, a junior from Bolingbrook, IL. Robert plans to attend graduate school in the future and eventually own his own business.

Donald W. Hamer Fellows

The Hamer Fellows for 2006-2007 are (pictured from left to right): Sidhartha Gupta, Cheng Lin Tsai, Pam Martin, Hunter McDaniel, James Langer, Aaron Jackson, Kevin Huang, Brad Stumphy, Patrick Driemeyer, Phil Heil, Jamey Fenske, Jericho Moll, and Henry Wu. The Hamer Fellowship was established by Donald Hamer (BS CER '45) and is presented to exceptional students entering their first year of graduate study in the MatSE Department.

Welcome Dawn Sandone

Dawn Sandone, major gifts officer in the College of Engineering Development Office since February 2000, is the new development officer for the MatSE Department. She replaces Kent Studer who is now working in corporate relations for the College. Sandone is responsible for raising funds, assisting the department in identifying support needs, and keeping alumni connected with the latest MatSE accomplishments and developments. She also serves as the major gifts officer for the Aerospace Engineering and Physics Departments.

Dawn Sandone

Born in Orlando, Florida, Sandone earned a B.S. in business administration from Stetson University in DeLand, Florida. She is in the process of pursuing a master's degree in the College of Education at the University of Illinois. When she returns from her many enjoyable travels around the world, meeting with our esteemed alumni, she values her time with close friends, and helping out at her family's horse farm in Urbana.

Thank You

The student awards highlighted in this issue would not be possible without your support. The list of donors includes alumni and friends who have helped maintain MatSE's outstanding reputation. Included are individuals who have directed their gifts to MatSE between July 1, 2005, and June 30, 2006. We check the list carefully, but if we have overlooked you, please contact us so that we can correct our records. Some MatSE alumni chose to support other units of the University of Illinois; those gifts are not listed here but will be acknowledged by those units. If you wish to direct gifts to MatSE, please indicate MatSE on your check and on the donor form. For further information about making a gift, contact Cindy Brya, brya@uiuc.edu, (217) 333-8312. Individuals listed in **boldface** are first-time donors to MatSE. Thank you for your support!

Patrons – $1,000 or more

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Joseph Au (MS MET '72, PHD MET '76)
Pascal Bellon and Rosalyn Schwartz
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James (BS MET '73, MS MET '74, PHD MET '78) and Barbara Burk
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Robert Eagan (MS CER '68, PHD CER '71)
James and Anastasia Economy
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Samuel Stupp and Devora Grynspan
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Kenneth Kuna (BS CER '68, MS CER '69)
Ronald (BS MET '58) and Pamla Larson
Vonne Linse (BS MET '62)
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Douglas Ruhmann (BS MET '64)
Robert Sherman (MS MET '78, PHD MET '82)
Darrell Socie
Harold (BS CER '48, MS CER '49, PHD CER '51) and Gladys Sowman
Hans Thurnauer (MS CER '32)

Benefactors – $500 to $999

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Gerald Matusiewicz (PHD MET '81)
Fabio Mazzolai and Rita Angiolini
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Maurice Murphy (BS MET '41)
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Samuel Bader
Paul and Judith Baker
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Michael Bench (PHD MET '92)
Richard Berry (BS MET '82)
Stephen Boaz (BS CER '81) and Mae Seid Boaz

Thank You

Alfred Bonfiglio (BS Met '60)
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Nancy Sottos joins MatSE Department

Nancy Sottos

Professor Sottos joined the MatSE faculty this fall, most recently serving as interim head of the Department of Theoretical and Applied Mechanics at the University of Illinois. Sottos received her B.S. in mechanical engineering at the University of Delaware in 1986 and her Ph.D. in mechanical engineering at the University of Delaware in 1991. She is co-chair of the Molecular and Electronic Nanostructures Research Initiative and a part time faculty member at the Beckman Institute for Advanced Science and Technology. Her research group studies the mechanics of complex, heterogeneous materials such as advanced composites, thin film devices, and microelectronic packaging, specializing in micro and nanoscale characterization of deformation and failure in these material systems. Current research focuses on the development of autonomic materials systems that have the ability to achieve adaptation and response in an independent and autonomic fashion (*e.g.,* recent work on autonomic healing in polymers). Her research and teaching awards include the Office of Naval Research Young Investigator Award (1992), Outstanding Engineering Advisor Award (1992, 1998, 1999 and 2002), the Robert E. Miller award for Excellence in Teaching (1999), the University of Delaware Presidential Citation for Outstanding Achievement (2002), University Scholar (2002), Hetényi Award from the Society for Experimental Mechanics (2004), and Donald Biggar Willett Professorship in the College of Engineering (2006). Her research group was awarded the American Society for Composites Best Paper Award in 2002 and 2003, and the Tech Museum of Innovation Award for Technology Benefiting Humanity in 2001 for work on self-healing polymers. She is a member-at-large of the U.S. National Committee on Theoretical and Applied Mechanics, on the editorial board for *Composites Science and Technology* and *Experimental Mechanics*, and is the faculty advisor for the student chapter of the Society of Women Engineers.

Department of Materials Science & Engineering Fund

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Alumni and students participate in *Speed Meet*

Undergraduates met with alumni board members on October 12 in a fast-paced "speed-dating" inspired event called the Speed Meet. At the Speed Meet, students had the opportunity to talk to alumni who work in various industries and national laboratories in five-minute increments. Board members supplied door prizes, which included an HP printer and digital camera, and everyone's favorite Papa Del's pizza. The event was so well-received that we hope to hold a Speed Meet again in the future.

"This was a great opportunity to catch a realistic snapshot of what life might be like as we all follow different paths," said Chloe Miles, senior. "The five minutes were enough time to spark an interest in evoking a more intimate conversation over refreshments. The short time was also good practice for approaching corporate representatives at expo or other job fairs and piquing their interest in mere minutes."

Kevin Spencer, freshman, commented, "The speed meet was a great experience. It was very interesting to see all of the different directions that a degree in Materials Science can take you."

"The speed meet suited all MatSE students because of the variety of career choices made by the alumni," said Matthew Arcaro, junior. "Everyone from a bachelor's to a PhD to an MBA was represented, and they honestly answered any question, no matter how random. It was amazing to see how helpful and interested they were in your questions and your future."

Dwight Diercks (BS MET '67, MS MET '68, PHD MET '71) talks to students about his experience at Argonne National Laboratory.

Ken Kuna (BS CER '68, MS CER '69) talks about his career in the automotive industry.

Jim Burk (BS MET '73, MS MET '74, PHD MET '78) talks to students about his work at B.P. Exploration.

Would you like to come to campus to speak to students about your career? Alumni speakers are always welcome. Please contact Cindy Brya at (217) 333-8312 or brya@uiuc.edu for details. If your company is interested in hiring MatSE students for internships or graduates for full-time employment, please let us know! Resume books and CDs are free of charge.

"It was very interesting to see all of the different directions that a degree in Materials Science can take you."

-KEVIN SPENCER

Department Notes

John Rogers was named a Fellow of the American Physical Society, "For contributions to the fields of flexible electronics, optical fiber devices, nanolithography and picosecond ultrasonics."

Gerard Wong and **Jim Zuo** were promoted from Assistant to Associate Professor.

David Payne was selected to receive the 2007 Robert B. Sosman Award from the Basic Science Division of the American Ceramic Society. The award is given in recognition of outstanding achievement in basic science of an area that results in a significant impact to the field of ceramics.

David Payne

Nancy Sottos has been elected a Fellow of the Society of Engineering Science.

Erik Luijten's research using computer simulations to better understand the excess free energy of confined polymers was featured on the cover of Nano Letters (May 10, 2006).

Paul Braun has been named a University Scholar. This is the highest honor the campus can bestow on a young faculty member.

Dallas Trinkle

Dallas Trinkle joined the department this fall as an assistant professor. He is currently teaching MSE 406: Thermal and Mechanical Behavior of Materials.

Abhishek Agrawal, Ph.D. student in John Weaver's group, was recognized at the AVS Prairie Chapter Symposium for having the best poster of the meeting.

A poster on abnormal grain growth in nanograined metals by **Khalid Hattar**, Ph.D. student in Ian Robertson's group, and recent B.S. graduate **Jennifer Gregg** received a best poster award at the Physical Metallurgy Gordon Conference.

Ryan Haggerty, Ph.D. student in Trudy Kriven's group, received a travel award to attend the 64th annual Pittsburgh Diffraction Conference. He was also invited to give an oral presentation at the meeting.

Lynette Hosier, a 2006 Champaign Central High School graduate, earned a four-year, full-ride scholarship from the State of Illinois. Hosier is a freshman in MatSE.

The freshman enrollment in MatSE is at an all-time high, 70 students entered the department this fall.

At the Keramos national conference at MS&T 2006, Dan Krogstad, senior, got a hole in one during the ceramic putter competition. This was only the second time in the history of the competition that someone got a hole in one.

Another reason to be proud of your Degree...

U.S. News and World Report ranks our undergraduate program #1 and graduate program #2 in the nation. The MatSE Department at Illinois has been ranked in the top three programs in the nation for well over a decade.

Back to School Picnics

Graduate students and faculty gathered for a cookout at Crystal Lake Park on August 21. Pictured above: Rob Shepherd, Jen Hanson, Abby Griffith, and Matt Meitl.

Ian Robertson enjoys the undergraduate picnic on September 25 with MatSE junior Angela Gonzales.

John Abelson talks to Sandhya Chandrasekaran at the undergraduate picnic. Chandrasekaran is the director of the MatSE Undergraduate Advisory Board.

Economy invested as Founder Professor of Engineering

James Economy was invested this fall as a Founder Professor of Engineering. The Founder Professorships recognize distinguished senior members of the faculty for achievements in teaching, research, and service.

Jim Economy

Economy spent nearly 30 years in industry, at Carborundum Company and IBM, before joining the faculty of the University of Illinois in 1989 as Professor and Head of the newly formed Department of Materials Science and Engineering. Through his leadership, the department became one of the top-ranked materials departments in the nation. In 2000 he stepped down as Head to focus on teaching and research.

Economy's research includes the design of advanced materials with near-zero wear; new materials for air purification; and advanced composites based on polymer, metal, and ceramic matrices for highly aggressive environments. Recent notable accomplishments include the design of low-cost activated carbon fibers capable of removing a wide range of trace contaminants; a new family of ion exchange and chelating fibers, which can remove a wide range of ionic contaminants; new bactericidal fibers, which quantitatively destroy a broad spectrum of pathogens; and new, more robust RO membranes, which can function under more aggressive environments for desalination and waste water treatment.

He has published over 210 research papers, 47 book chapters, and holds over 70 U.S. patents. He was elected a member of the National Academy of Engineering in 1987 and became a Fellow of Polymer Materials Science and Engineering and the American Academy of Arts and Sciences in 2003. His awards from the American Chemical Society include the Schoelkopf Medal in 1972, Phillips Medal in 1985, and the H.F. Mark Award in 1998. He has also received the Southern Research Burn Institute Award in 1976, American Institute of Chemists Chemical Pioneer Award in 1987, P.J. Flory Award in 2001, and the Fiber Society Founders' Award in 2005.

In Memoriam

Walter Beattie (BS Met '37) died June 21, 2006, in Warrenton, VA. He was born in Alexandria, VA, on November 11, 1913. He worked as a metallurgical engineer for Armco Steel Corporation, retiring in 1977 after 40 years of service. He was a member of American Standards Testing Materials. He is survived by his daughter, Jinnie, son, Chuck, and grandson, Mark. He was preceded in death by his wife, Mary, in 2002.

Glenn Canfield (BS Met '59) died January 30, 2006. He was born September 20, 1935, in Springfield, IL. He resided in Longview, TX, for more than 30 years. He joined the U.S. Navy when he turned 17 and began active duty a few months later. While in the U.S. Navy, he finished high school and graduated with his class. He graduated from the University of Illinois and worked in the metals industry for the next 27 years. During that career, he worked in process research, quality control, operations management, site engineering, and development engineering. Having previously earned his license as a professional engineer by the State of Texas, he earned an MBA from the University of Texas at Tyler in 1987. Becoming self-employed in 1986, he formed the Plum Group, which publishes monthly reports to suppliers and users of steel industry products. He was also owner and president of Thermo Tech Co., a manufacturer of deoxidation products for the steel industry. He also held the seat of Chairman at Canfield Engineering, Inc., a consult team for metallurgical studies. He held two patents on de-oxidation products and methods. He is survived by his wife, Virginia; 7 children; 11 grandchildren; and 10 great-grandchildren.

Sven Gafvert (BS Mining '53) passed away on May 6, 2006. He was born on September 12, 1923, in New York City, NY. He served in the Swedish Navy during World War II. He worked for Sundstrand and Eaton Corporations for over 30 years. He is survived by his wife, Margot, sons, Rolf and Ulf, and granddaughter, Sarah.

Melvin Gibbs (BS Cer '46) passed away on May 28, 2006, at his home in Memphis. He was born on July 18, 1920, in Macedonia, IL. He was a veteran of the U.S. Army in World War II, serving as a Captain in the Air Corps. He worked for Inland Steel in East Chicago, IN, for 33 years before retiring to Germantown. He was preceded in death by his wife of 57 years, Mary. He is survived by his son, Jim, daughter, Joyce, three grandchildren and two great-grandchildren.

Charles "Dick" MacPherson (BS Cer '50) died June 3, 2006. He was born October 16, 1926, in Galesburg, IL. He was accepted into the Army Specialized Training Corps at Ohio State University and served three years. He graduated from the University of Illinois in 1950. He worked in the fiberglass industry and held several process patents. He later attended the Wharton School of Business. Survivors include his wife, Jackie: three sons; three daughters; two stepsons; a stepdaughter; six grandchildren; two great-grandchildren; seven step-grandchildren; and former wives, Dorothy and Betsy.

Cincinnati Alumni Reception

The MatSE Department joined forces with the College of Engineering for a Cincinnati Alumni Reception on October 16, in conjunction with the MS&T meeting. Over 40 engineering alumni attended the reception held at the Banker's Club in downtown Cincinnati, Ohio.

Pictured above: Jim Smay (PhD MatSE '02), Geoff Brennecka (PhD MatSE '06), Bruce Tuttle (PhD Cer '81), Terry Garino (PhD Cer '82), and Paul Clem (PhD Cer '96) attended the reception in Cincinnati. Smay is employed with Oklahoma State University; *see article on next page*. Brennecka, Tuttle, Garino, and Clem are all at Sandia National Laboratories.

Chicago Area Alumni Reception

March 29, 2007
6:00-8:00 p.m.
Chicago Marriott Oak Brook
1401 W. 22nd Street
Oak Brook, IL 60523

Mark your calendars for our alumni reception next spring in the Chicago area. Join fellow Engineering at Illinois alumni for complimentary hors d'oeuvres and beverages at a casual, informal gathering in Oak Brook. Online registration will begin on February 1, 2007.

www.engr.uiuc.edu/alumni/services/events

Class Notes

1960s

Bill Robinson (PhD Met '66) owns Robinson Seismic Ltd. in Petone, New Zealand. The company specializes in developing, testing, and manufacturing seismic protection and damping equipment.

1980s

Linda Romano (BS Met '80, PhD Met '87) spoke at a MatSE colloquium in October and gave a seminar for women engineering students on balancing work and family. She works at Philips-Lumileds Lighting in San Jose, CA, and lives in Sunnyvale with her husband, Johan Knall, and children Jenny, 15, and Erik, 12.

Linda Romano

Steve Skewes (MS Met '88) is President of Induction Atmospheres, a company that specializes in the integration of induction heating technology, in Rochester, NY.

1990s

John S. Vetrano (PhD Met '90) left the Pacific Northwest National Laboratory, after 15 years, to join the Department of Energy, Office of Basic Energy Sciences, as a program manager.

Marge (Vicek) Kaunas (BS Cer '97) gave birth to a baby girl, Sara Anne, on November 1, 2006.

Michael Horton (BS Cer '98) received his MBA from Bradley University and is a Transportation Buyer for Caterpillar Logistics Services, Inc., in Morton, IL. He and his wife have a 16 month-old son, Reid.

Kevin Grens (BS MatSE '99) joined Angstrom Scientific as a Technical Sales Representative.

Ashley Predith (BS MatSE '99) received her Ph.D. in June from MIT. Her research was on the thermodynamics and kinetics of materials for solid oxide fuel cells.

Alumni receive honors

Victor Tennery (BS Cer '54, MS Cer '55, PhD Cer '59) is the 2006 recipient of the Arthur Frederick Greaves-Walker Award from the National Institute of Ceramic Engineers. Tennery worked at Oak Ridge National Laboratory, TN, from 1969-1994. During his 25 years there, he held various positions including Research Ceramist, Group Leader and Section Head in the Metals and Ceramics Division. He retired in 1994 after serving for 12 years as the Director of the High Temperature Materials Laboratory, a national materials user facility. Prior to joining ORNL, he was on the faculty of Ceramic Engineering at the University of Illinois for 9 years and organized and taught courses and conducted research in ferroelectric and piezoelectric ceramics and X-ray diffraction. He has served as an ABET visitor for the National Institute of Ceramic Engineers since 1985. He is an Emeritus member of the American Ceramic Society, and a member of both the Basic Science and Engineering Ceramics Divisions. He served as Vice President of the Society from 1989-1990. He is an active member of the American Society for Testing and Materials (ASTM), a Charter Member of Committee C-28, and active on many subcommittees. He is the author or co-author of more than 135 papers and technical reports, and one book. He has received numerous awards including an Appreciation Award from ASTM, Fellow of NICE, Distinguished Merit Award from the MatSE Alumni Board at the University of Illinois, and Fellow of ACerS, to name a few.

Warren Wolf, President of ACerS, congratulates Victor Tennery

James Smay (PhD MatSE '02) has received a Presidential Early Career Award for Scientists and Engineers (PECASE), one of the most prestigious awards to honor investigators in the early stages of promising research and education careers. The award is the highest honor bestowed by the United States government on scientists and engineers beginning independent careers. Awardees are chosen from 350 to 400 assistant professors who have received grants from NSF's Faculty Early Career Program (CAREER) in the same year of their nomination for the President's award. CAREER awards range from $400,000 to nearly $1 million over five years to support career research and education. Smay, an assistant professor at Oklahoma State University, studies the use of colloidal inks in a solid freeform fabrication process. Through the use of colloidal inks, it is possible to print two and three-dimensional structures, including complex geometries and those with varying material properties. These advantages enable a range of applications, from electronic packages to scaffolds for tissue engineering. His education plan includes, as its centerpiece, mentoring and educational activities involving students and young people of the Cherokee Nation.

Elliot Clark (MS Met '79, PhD Met '86) was elected a 2006 Fellow of ASM. Clark is a Fellow Materials Engineer at Savannah River National Laboratory in Aiken, SC. He was recognized "for significant contributions to the basic and applied sciences concerning the behavior of hydrogen and its alloys, and contributions to leadership roles in our national societies, ASM and IMS."

Jeff Bertschinger (BS Met '78) visited campus on September 29 with his wife, Maria, and son, David. Bertschinger is the owner of Olde South Industries in Owensboro, KY. His company does cutting tool grinding and manufacturing. His son will be entering college next year, and the University of Illinois is on his list of prospective schools.

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