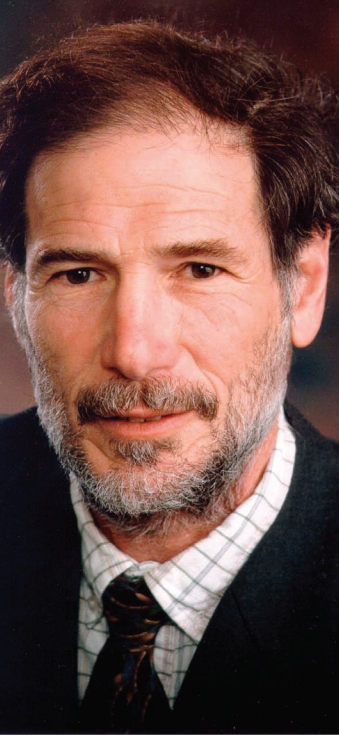


New Cancer Drug Delivery System:

Effective and Reversible



Averback Named MatSE Interim Head

Robert Averback, the Donald W. Hamer Professor of Materials Science and Engineering, was named interim head of the MatSE Department and has served in this capacity since June 15. A national search is underway for a new permanent head. Averback replaces Ian Robertson, who served as the department head since 2004.

Averback received his Ph.D. for work in low-temperature, solid-state physics at Michigan State University in 1972. He became interested in materials science and ion-solid interactions while a postdoctoral fellow at Cornell University. Before coming to the University of Illinois as professor in 1987, he was a staff physicist at Argonne National Laboratory for 13 years. Averback spent two years as a guest scientist at the Juelich Research Center in Germany.

His research program investigates the fundamental aspects of far-from-equilibrium materials, with emphasis on applications in extreme environments, such as ultra-

high temperature, particle irradiation and stress. The work focuses primarily on self-organization, the kinetic and mechanical properties of nanostructured materials and defect properties in all hard materials. Additional work is performed on phase transformations in metals far from equilibrium and examines the structure and kinetic behavior of deeply undercooled liquid metals. The research program includes both experimental and computer simulation methods.

Averback was a co-recipient of the Department of Energy award for sustained outstanding research in 1985 for his work on radiation-induced segregation and was awarded the Alexander von Humboldt Senior Research Prize in 1993. He is a Fellow of the American Physical Society and has served on the Board of Directors of the Materials Research Society. He has published approximately 300 papers in archival journals and is listed among the most cited authors in the Web of Science.

From the Interim Head

Much has happened in the department since the last newsletter. As many of you may already know, Ian Robertson stepped down as Department Head last June, after seven years of service to the department. We are all grateful for his leadership, as the department had many successes during his tenure. We are now looking forward to a new Department Head to be named at the end of this academic year. A national search is currently underway.

The global financial crisis has created difficult economic conditions in the state of Illinois, as elsewhere, and we are waiting to hear how this will impact the University and department. Little information is currently available. Despite these difficult times, we have had much to celebrate these past few months. First of all, John Rogers won the prestigious MacArthur Award, and as noted elsewhere in this newsletter, several of our faculty, students and alumni garnered other prestigious awards. In addition, Pascal Bellon and Paul Braun were promoted to Full Professor. We have also had the good fortune this semester to welcome two new faculty to the department, Shen Dillon and Lane Martin. Shen is a graduate of Lehigh University, and Lane of UC Berkeley. Our efforts in ceramic materials are greatly strengthened by these additions. We also added two new Lecturers to the department, Lori Sanders and Mohamed AbouKhatwa. Lori will help teach our biomaterials courses, and Mohamed will teach our introductory metals classes.

Unfortunately, we are losing two valued colleagues in our biomaterials effort. Gerard Wong, who joined us in 2000, has played a vital role in building our biomaterials program. He has taken a position as

Full Professor in the Bioengineering Department at UCLA. Leaving with him is Wujing Xian. Wujing developed a very successful undergraduate laboratory in biomaterials, with the laboratory manual recently published by CRC Press.

Lastly, I would like to tell you some of our plans for undergraduate and graduate education. One of the challenges with having a successful undergraduate program is managing the large number of students. We now have 308 undergraduates enrolled in the department, and our junior level classes have in excess of 80 students. A major revitalization of the undergraduate laboratories is now essential. David Cahill is addressing the situation by redesigning the junior level labs with the goal that no more than two students work on a single experiment at one time; we are indeed striving for real hands-on experience. We are also in the process of creating a new scholarship program for our undergraduates to provide them with unique opportunities for research experience. We are making efforts to broaden our graduate course selection too. With shrinking faculty numbers, this is a challenge, but with the addition of our two new Lecturers, we are beginning to make progress.



Lars Bjaalie and Suzanne Sullivan measure the difference in temperature created by running different currents through a thermoelectric material in the junior lab.



Teng-Sing Wei and Tom Quinn observe what happens when a binary organic alloy is heated and cooled. They view the image on the computer which is live fed from a CCD camera attached to an optical microscope.

Rogers Wins \$500,000 MacArthur Award



John Rogers, the Lee J. Flory-Founder Chair in Engineering Innovation, was named a 2009 MacArthur Fellow by the John D. and Catherine T. MacArthur Foundation. He is among 24 fellows who will each receive \$500,000 in “no strings attached” support during the next five years. MacArthur Fellows are selected for their creativity, originality and potential. By providing resources without stipulations, the foundation offers the opportunity for fellows to accelerate their current activities or take their work in new directions.

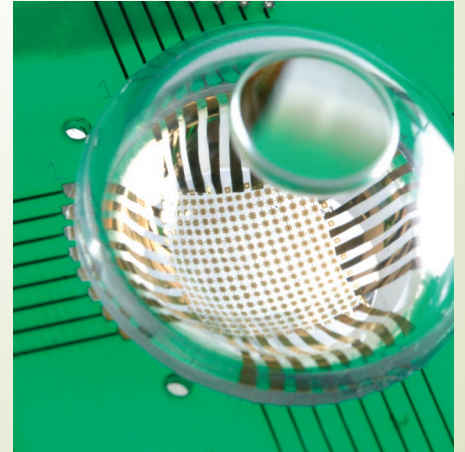
Rogers’ research focuses on new materials for classes of electronics that overcome design limitations associated with conventional systems, all of which rely on planar, rigid and brittle semiconductor wafers. The soft, stretchable and curvilinear devices enabled by these approaches open entirely new application opportunities, ranging from cameras with designs that are inspired by the human eye, to electronics that can integrate intimately with the soft tissues of the human body for advanced monitoring or therapeutic purposes.

Highlights of Rogers’ work during the last two years include the first electronic-eye cameras, flexible inorganic light-emitting diode displays, stretchable integrated circuits and bendable monocrystalline silicon solar modules. His current work also focuses on conformal, biointerfaced and bioresorbable electronics and sensors.

Rogers is a Fellow of the American Physical Society and of the American Association for the Advancement of Science, an inaugural Fellow of the Materials Research Society and a U. S. Department of Defense National Security Science and Engineering Faculty Fellow.

One of the nation’s largest private philanthropic foundations, the MacArthur Foundation has awarded more than \$3 billion in grants since it began operations in 1978.

-University of Illinois News Bureau Photo by Thompson-McClellan

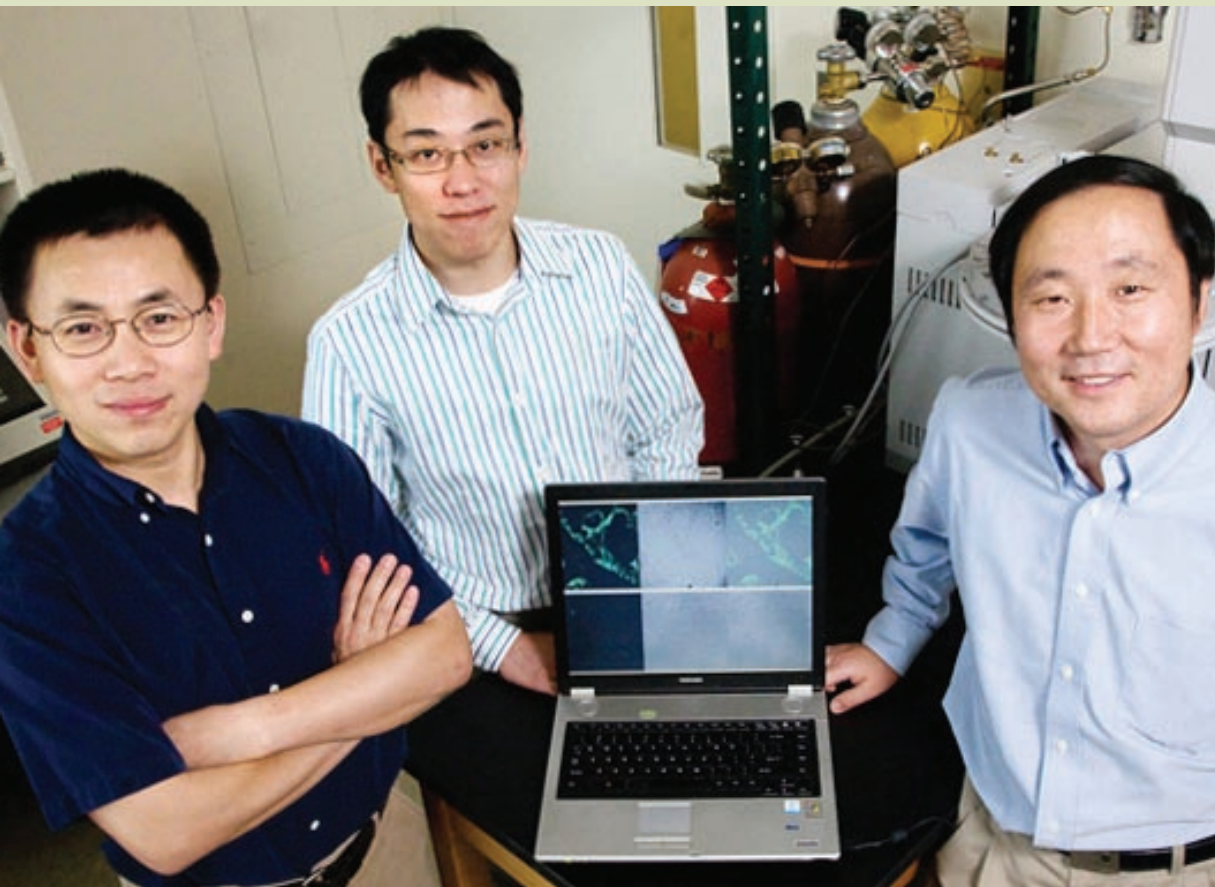


This image shows a digital camera that uses a hemispherical photodetector array in the size and shape of the human eye. The system exploits a stretchable form of silicon electronics to achieve imaging characteristics that are better than those possible with a conventional planar device.



Mechanically flexible solar module formed with interconnected arrays of monocrystalline silicon microcells. This class of technology could expand the use of silicon in photovoltaics.

New Cancer Drug Delivery System is Effective and Reversible



Jianjun Cheng, Rong Tong and Yi Lu were on a team that developed a reversible method for delivering cancer drugs to tumor cells.

Photo by L. Brian Stauffer, University of Illinois

For cancer drug developers, finding an agent that kills tumor cells is only part of the equation. The drug must also spare healthy cells. And, ideally, its effects will be reversible, to cut short any potentially dangerous side effects.

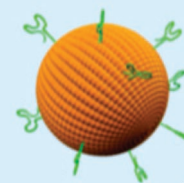
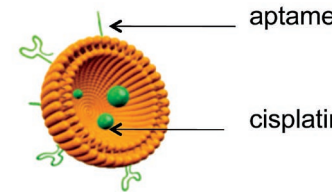
University of Illinois researchers report that they have assembled a new cancer drug delivery system that, in cell culture, achieves all of the above. His study is published in *Angewandte Chemie International Edition* 2009.

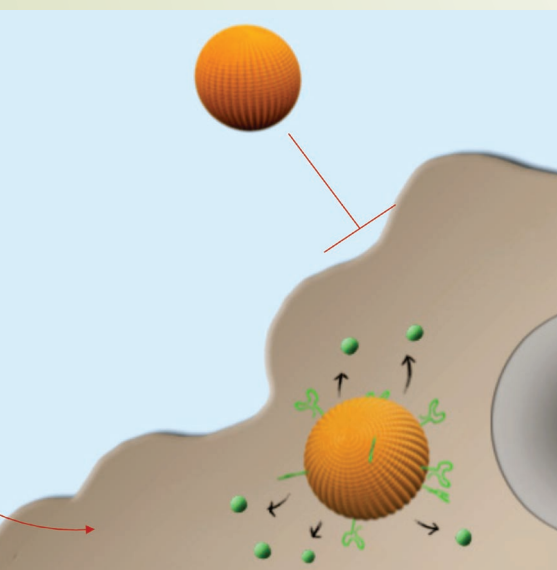
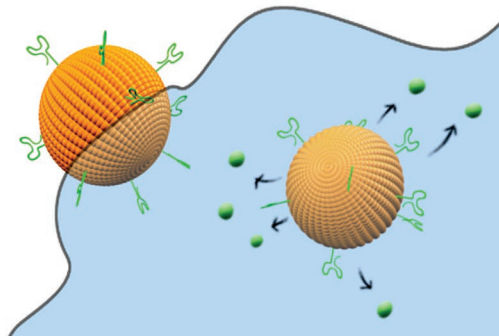
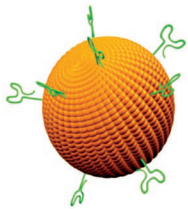
The team began with the knowledge that small, membrane-bound compartments, called liposomes, are useful as drug-delivery vehicles. When linked to molecules that target receptors on cancer cells, liposomes can enter and dump their cancer-killing contents into those cells.

Scientists have spent more than a decade trying to direct liposomes to specific cancer cells, with limited success. A common approach involves attaching an antibody to the liposome membrane. Ideally the antibody will bind to a cancer cell receptor so that it can deliver the liposome – and the cancer drug – into the cell. Developing such antibodies is costly and time-consuming, however, and the process of attaching them to liposomes is difficult to control. Antibodies spur an immune response, requiring extra steps to create a useable therapeutic agent, and the ability of antibody-conjugated liposomes to bind to cancer cells can be inconsistent.

Some small molecules, such as the vitamin folate, also work as cancer cell targeting agents, but those now in use are not as good as antibodies at binding to cancer cells.

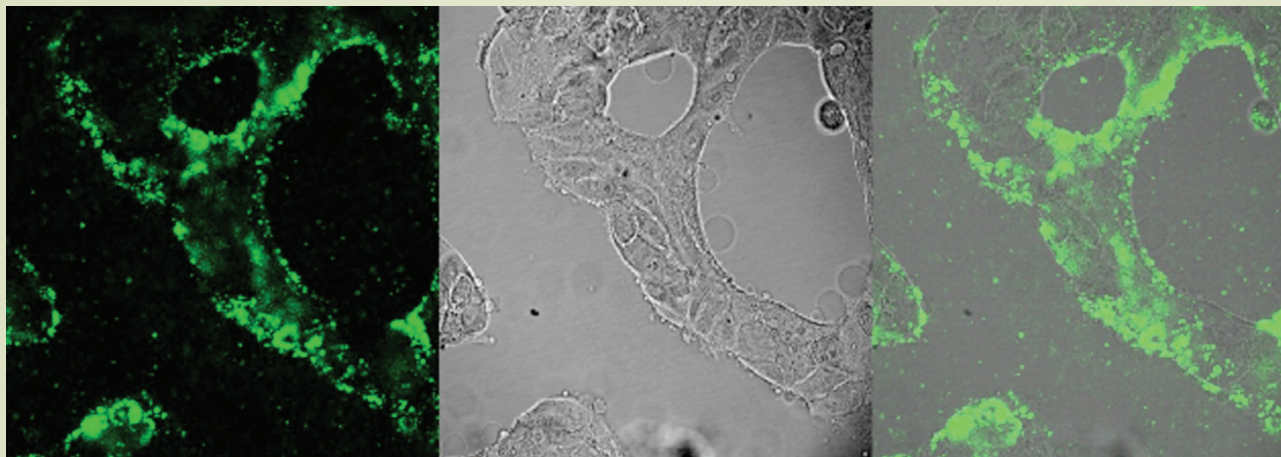
To solve the cell-targeting problem, the U of I team turned its attention to small molecules called aptamers.





*Schematic illustration of MCF7 (NCL(+)) cells treated with NCL aptamer-functionalized liposomes containing cisplatin, one of the most significant cancer therapeutics. This scheme shows that the NCL-aptamer-liposomes could be internalized into cells via NCL mediated endocytosis; while the liposomes without aptamer on its surface cannot be uptaken by MCF7 cells. Treated MCF7 cells will display cell death after NCL-aptamer-liposomes are internalized and release cisplatin. The paper including this study is accepted by *Angewandte Chemie International Edition*. Cao, Z., Tong, R., Mishra, A., Xu, W., Wong, G., Cheng, J. and Lu, Y.*

*Confocal images of MCF7 (NCL(+)) cells treated with NCL aptamer-functionalized liposomes containing calcein. From left to right: fluorescence image, transmission image, and overlay. This study demonstrated that the binding capability of the NCL-aptamer was well preserved during liposome formulation and liposomes could be internalized into cells via NCL mediated endocytosis. The paper including this study is accepted by *Angewandte Chemie International Edition*. Cao, Z., Tong, R., Mishra, A., Xu, W., Wong, G., Cheng, J. and Lu, Y.*



“Aptamers are short strands of DNA or RNA; they are highly efficient binders, and are very easy to make, label and manipulate,” said Zehui Cao, a postdoctoral researcher in the laboratory of chemistry professor Yi Lu, who led the study. Materials science and engineering professors Gerard Wong and Jianjun Cheng were co-principal investigators on the study with Lu. Graduate students Rong Tong (who is co-first author on the paper with Cao), Abhijit Mishra and Weichen Xu also worked on the study.

Lu’s laboratory specializes in isolating aptamers that bind to specific molecules and converting them into effective sensors and diagnostic agents. His team used an aptamer that binds to nucleolin receptors, which are found in abundance on certain breast cancer cells. The researchers then developed an effective method for attaching the aptamer to a liposome loaded with cisplatin, a drug that effectively kills cancer cells but has troublesome side effects when administered intravenously.

Tests in cells grown in the lab yielded promising results. Four days after they exposed the cells to the new drug-delivery system, 59.5 percent of the breast cancer cells had died, while less than 12 percent of breast cancer cells treated with cisplatin alone had died.

“By labeling a liposome that contains cisplatin with a cancer cell-specific aptamer, we have shown delivery of the drugs to cancer cells without significant damage to regular cells,” Lu said, “making it possible to maximize the drug potency while minimizing its side effects.”

This approach “integrates the advantages of small molecules and antibodies,” said Cheng, who helped pioneer the use of aptamers as targeting molecules for drug delivery. “This is the first study to integrate the aptamers and the liposome.”

Another advantage of using aptamers as targeting agents is that they are easily disabled. They readily bind to complementary DNA, which prevents them from interacting with cell receptors.

The new approach will be useful for many applications, Wong said. “What we’re really doing here is coming up with a general toolbox to deal with a broad range of cancers.”

“You can change aptamers to target a different type of cancer, you can change the therapeutic molecules to fight cancer or other diseases, and you can reverse the dose,” Cheng said. “That’s a lot of tools in the toolbox. It has great potential.”

The collaboration between materials scientists and chemists was made possible by administrative structures at the U of I that foster such partnerships, Wong said. The work was supported by a National Science Foundation (NSF) Nanoscale Science and Engineering Center grant, the NSF Career Program and the Siteman Center for Cancer Nanotechnology Excellence (SCCNE, Washington University) – Center for Nanoscale Science and Technology (CNST, UIUC).

-University of Illinois News Bureau

MatSE Welcomes Shen Dillon and Lane Martin to the Faculty



Lane Martin

Lane Martin

Lane Martin received his Ph.D. in Materials Science and Engineering from the University of California, Berkeley, in 2008. Following graduation, he served as a postdoctoral fellow in the Quantum Materials Program, Materials Science Division, at Lawrence Berkeley National Laboratory from March 2008 to July 2009. Lane joined the MatSE department at Illinois as an assistant professor in August 2009.

"My decision to come to the University of Illinois really came down to the fact that it offered the whole package," Lane said. "One would be hard pressed to name a materials science and engineering department that excels in as many areas as the department here at Illinois. From the first visit I was impressed by the intensity and depth of the ongoing research in the department and quickly realized that this was the sort of environment I wanted as a young faculty member."

Lane's research focus is on the growth and characterization of novel oxide materials – both thin film heterostructures and nanostructures – in pursuit of two major research thrusts: multiferroic and multifunctional materials and devices and energy applications (including solar energy and heat-to-energy conversion). The foundation of the research is based on the controlled growth of oxide thin film heterostructures and nanostructures via pulsed laser deposition and molecular beam epitaxy. Aided by state-of-the-art in-situ characterization methods such as reflection high energy electron diffraction (RHEED) one can achieve atomic-scale control of these oxide materials. Lane's research augments these growth capabilities with detailed characterization (structural and physical) – including extensive utilization of scanning probe- and synchrotron-based experiments – while leveraging strong collaborations both at Illinois and across the world to gain fundamental insight and understanding of these materials.

When he is not writing proposals and constructing his new lab, Lane enjoys food (eating and cooking), the arts and sports. "I'm already hoping that the Illini will right the ship in the next few years and make it back to the Rose Bowl," Lane said. "L.A. is very nice around New Year's."



Shen Dillon

Shen Dillon

Shen Dillon received his Ph.D. in Materials Science and Engineering from Lehigh University in 2007. His doctoral thesis focused on segregation to and the atomic structure of grain boundaries in ceramics and their relation to microstructural evolution. Following graduation, Dillon went to work as a research associate at Carnegie Mellon University and Visiting Professor at Lehigh University. At Carnegie Mellon, the focus of his work was three-dimensional characterization of microstructures in order to obtain data critical to understanding microstructural evolution. Dillon spent the 2008 academic year as a visiting research scientist at the Massachusetts Institute of Technology working on materials for energy storage.

Dillon joined the faculty in the MatSE Department at the University of Illinois as a visiting assistant professor in 2008 and as an assistant professor in 2009. "I decided to come to Illinois based on the fantastic reputation of the department," he said. "I also appreciated the amount of care that the department seemed to give young faculty in terms of mentoring and career development."

His research focuses on linking atomic-scale processes in ceramic materials to the microstructural level and bulk properties. Much of the current work relates to the role of microstructure, defects and interfaces in electrochemical intercalation and materials for energy storage. Other areas of research include the role of interfaces and defects in the processing and properties of ceramic materials, ceramic-metal interfaces and interfaces in other composite structures. This includes microstructural development in structural and electro-ceramics, atomistic effects in high-temperature oxidation, structure-property relations in lithium storage media and the role of interfaces in catalytic activity.

This semester Dillon has been helping Bob Averback teach undergraduate thermodynamics. He will likely be teaching a new elective next semester based on materials for electrochemistry. His hobbies include snowboarding, gardening and exercising. "Unfortunately, I haven't had the opportunity to do any of these things very much in recent years," Dillon said. He also enjoys cooking and baking.



A Material Advantage volunteer helps a CASE student from Bloomington make slime.



CASE students make polymer slime at Experimenting with Engineering Day.

Material Advantage Members Help Vision Impaired Students Experience Materials Science and Engineering

Engineering Advocates, an outreach program in the College of Engineering, hosted “Experimenting with Engineering Day” for low-vision and blind students on November 13. More than 100 students, parents, teachers and volunteers were present to participate in the fun. The students (K-12) participate in the Central Affiliation of Special Education (CASE) Program which serves 13 area counties and is based in the Urbana Public Schools.

Members of the University of Illinois Material Advantage chapter provided intriguing hands-on activities for the CASE students and volunteered at the event. “I thought the event was a great experience for everyone involved,” said Matt Seebeck, a senior in MatSE and service chair for Material Advantage. “Since all the children had vision disabilities, it was important to choose demonstrations that would stimulate the other senses. We decided to make four demos: polymer slime, super absorbents, magic sand and Non-Newtonian fluids. The kids loved the demos because they were very hands-on.”

In the morning, CASE students learned about water flow and permeable materials by making edible aquifers out of ice cream, soda and gummy bears; polymers by making slime; and buoyancy through floating aluminum boats. In the afternoon, the students and parents worked in teams to construct the highest balloon towers, the strongest bridges from marshmallows and toothpicks and the best constructed furniture to withstand a stack of textbooks.

Following the event, students and parents alike remarked how much fun they had through the lively day of interactive and informative engineering activities. Pam Duda, Vision Coordinator of CASE said, “Students and parents loved the hands-on activities which allowed them to obtain a sound understanding of the concepts. Many stated that this activity day was one of their favorites.” Several CASE students reflected that they never realized how fundamental engineering is to life and now consider engineering a career worth exploring.

Material Advantage volunteers for the event included Matt Seebeck, Ben Rasmussen, Megan LaBahn, Michelle Drymiller, Jon Naber, Matt Wolszon, Erich Diesel, Steven Richlak and Jingtian Hu. The volunteers enjoyed having a chance to give back to the community. “There was a lot to take away from this experience,” Seebeck said. “I believe the kids learned a lot of materials science and had fun in the process. The volunteers and I walked away from the event with a sense of accomplishment and it was very rewarding to be a part of such a terrific cause.”

Susan Linnemeyer, Director of the Office of Special Programs in the College of Engineering, contributed to this story.



Material Advantage at Illinois

The new Material Advantage chapter at the University of Illinois was represented at the MS&T '09 conference in Pittsburgh, October 25-29.

Pictured from left to right: Julie Vroman, Stephen Menke (Vice President), Ben Pierce, Alissa Cote, Mike Scarpelli, David Duterte, Caitlin Tribout, Sarah Treece, Matt Seebeck, Don To (President) and Steph Miller.



John Abelson

Energy and Sustainability Initiative Highlights Interdisciplinary Studies at Illinois

Beginning in January 2010, students with an interest in energy resources, energy conversion, sustainable environmental systems, the built environment and related areas, will have a new option to enhance their graduate experience at Illinois. The College of Engineering initiative in Energy and Sustainability Engineering (EaSE) will promote research, education, industrial outreach and student engagement, and serve as a bridge between Engineering and complementary efforts on campus.

"The new EaSE graduate option program is the result of a rich dialogue between all the departments in engineering, earth sciences, chemistry and architecture/urban planning over the past 15 months," according to John Abelson. "We will enthusiastically promote the writing of interdisciplinary research proposals, taking advantage of the new initiatives from the federal government." John Abelson and Cliff Singer, professor of Nuclear, Plasma and Radiological Engineering, are EaSE co-directors.

In the EaSE graduate option program, participants will be M.S. and Ph.D. students who are enrolled in an existing departmental degree program. They will fulfill the requirements of the EaSE option by adjusting their course selections, without delaying their degree progress or adding to their total course load. A team-taught core course will provide all the participants with a common platform of interdisciplinary knowledge and a forum for the exchange of ideas. Students will then elect two courses from one of seven areas of specialization; these areas utilize pre-existing courses offered by the College of Engineering and by other departments. Finally, the student will elect a breadth course from a different area of specialization.

The EaSE option has been designed to facilitate enrollment of graduate students outside of the College: so far, cooperative agreements have been established with the School of Earth, Society, and the Environment and the College of Fine and Applied Arts. "The EaSE initiative is a significant step in breaking down barriers to interdisciplinary work on the challenge of transitioning to a sustainable energy future," said Singer.

EaSE seminar speakers will be faculty experts in each of the EaSE areas of specialization. There will also be guest lecturers from industry and other universities. Alumni who are interested in participating in the program should contact Professor John Abelson at (217) 333-7258 or abelson@illinois.edu.

Teachers Come to Summer Camp



The MatSE Department welcomed 19 teachers from five states to the ASM Teachers Camp held the last week of July on the University of Illinois campus. During the week-long program, teachers learn how to incorporate low-cost or even no-cost materials science and engineering experiments into their curriculum. This year's camp was sponsored by the ASM Materials Education Foundation, University of Illinois, Peoria Chapter ASM International, and the Caterpillar Foundation. If your company would like to support the 2010 camp, please contact Cindy Brya at (217) 333-8312 or brya@illinois.edu.

Department Notes

David Payne received the 2009 W.R. Buessem Award for outstanding contributions in the field of dielectrics and piezoelectrics. He received the award from the Center for Dielectric Studies at Penn State University on October 19.

Ian Robertson was named a Fellow of ASM International.

Jennifer Lewis received an American Chemical Society (ACS) Langmuir Lecture Award at the 2009 Fall ACS meeting.

John Rogers was named a 2009 National Security Science and Engineering Faculty Fellow by the Department of Defense.

Angus Rockett is the new President-elect of the AVS Science and Technology Society. He will begin serving his term in early December. Rockett will serve as AVS President beginning in December 2010.

Pascal Bellon and **Paul Braun** were promoted from Associate to Full Professor.

Chris Hansen and **Bo Wang** received Mavis Memorial Fund Scholarship Awards from the College of Engineering.

A team of students from the University of Illinois including MatSE senior **Lisa Mazzocco** has won a \$50,000 Ford College Community Challenge grant to help prospective tenants in the Champaign-Urbana area learn about the energy efficiency of apartments they might rent.

Qian Chen, Ph.D. student in Professor Steve Granick's research group, was selected for the Yee Memorial Fund Fellowship.

Don To, a senior in MatSE, received a George A. Roberts Scholarship from the ASM Materials Education Foundation. The scholarship provides \$6,000 toward educational expenses for one academic year. It is awarded to an outstanding undergraduate student who demonstrates exemplary academic and personal achievements, interest and potential in metallurgy or materials science and engineering, as well as financial need. To is President of the Material Advantage chapter at the University of Illinois. He accepted the award at the ASM Leadership Awards Luncheon on October 26 during the MS&T conference in Pittsburgh.



David Payne



Ian Robertson



Jennifer Lewis



Angus Rockett



Don To

The Materials Science and Engineering Department is pleased to add two more undergraduate scholarships to its roster of student awards: The Robert E. and Karen Martin Luetje Scholarship and The Fredrick A. Petersen Scholarship. These scholarships were awarded for the first time on April 17, 2009, at the MatSE Awards Banquet, held at the Alice Campbell Alumni Center. With the soaring cost of tuition at the University of Illinois and elsewhere, students and families depend on these scholarships even more to help finance their education. The department would like to express its gratitude to these alumni for their support of undergraduate materials education at Illinois.

Alumni Gifts Support Undergraduate Materials Education

(left) Bob and Karen Luetje during their college days at the University. This photo was taken when Karen was a member of the Homecoming Court.

(right) Bob and Karen Luetje with John Sadlik, the first Luetje Scholar in the MatSE Department.



Luetje Scholarship Established at Illinois

They could have taken a first-class cruise to exotic ports of call to celebrate their 50th wedding anniversary. Instead, Bob and Karen Luetje decided to celebrate their golden anniversary by establishing an endowed scholarship at the University of Illinois.

Bob (BS Met '59) and Karen (BS Leisure Studies '58) met at the University of Illinois at Urbana-Champaign campus at a sorority exchange (Sigma Pi and Alpha Chi Omega). Karen was from Hoopston, IL, and Bob was from Hamilton, OH. Karen was on the Homecoming Court in 1957 and a varsity cheerleader (basketball and football) for two years. "Karen and I view the Illinois experience as the foundation for the balance of our adult lives," Bob said, "and we were thankful that we were so well prepared—more so than we realized!"

After graduation, the couple moved to Middletown, OH, where Bob worked for Armco Steel Corporation, and Karen taught and coached at Carlisle High School for a few years. Bob worked 27 years at Armco (now AK Steel) in Research and Technical Marketing. He also became a registered patent agent. Then, Bob and Karen moved to Northville, MI, where he worked 15 years as Vice President of Technology for Kolene Corporation, a developer and supplier of molten salts for descaling stainless steel after annealing. He has been very active in ASM International serving on numerous committees as well as the Dayton Chapter Chairman, ASM National Board of Trustees and President of the Heat Treating Society. He has also served on the Board of the Engineering Society of Detroit. Bob is a Fellow of ASM

and the Engineering Society of Detroit.

Bob and Karen have two daughters, Robin Adams, an engineer, and Rhonda Luetje, a computer technologist, and two young grandchildren. In retirement, they enjoy spending time with their grandchildren and staying active in their Methodist church. Bob is an avid golfer and fisherman, especially fly fishing in northern Michigan. They also enjoy spending time in Florida in the winter months.

The first Robert E. and Karen Martin Luetje Scholarship recipient is John Sadlik, a junior from Naperville, IL. John chose the Materials Science and Engineering Department at Illinois not only for its reputation as one of the top undergraduate materials programs in the nation but also for the personal attention the students receive in the department. He plans to concentrate in ceramics and is especially interested in their electronic properties.

"Although it may not seem like much, \$1,000 really goes a long way with helping to pay for school," Sadlik said. "It frees up money for things like books or a computer. It's nice to know that those things are paid for and that I don't have to worry too much about expenses like that. Scholarships are also a great motivator. I feel like I have to work that extra bit harder in order to get the most out of this great opportunity I've been presented with."

The Luetje's are proud to be able to give back to their alma mater. "In these difficult economic times, there are more talented students than ever who may not be able to afford to get the education they need and deserve," Bob said. "Scholarships might make a difference in some student's career and that is exciting to consider."

(left) Karen Petersen, Meghan McKelvey and Ingrid Reuter

(right) Fredrick "Pete" Petersen, University of Illinois campus, Fall 1933



Petersen Scholarship a Fitting Legacy for Faithful Alumnus

Before Fredrick (Pete) Petersen passed away in September 2008, he left his mark on his beloved University of Illinois. Thanks to his generosity, the first Fredrick A. Petersen Scholarship was awarded to an undergraduate in Materials Science and Engineering in April 2009.

Petersen himself held a scholarship when he entered the University of Illinois in 1933. Tuition was \$25 per semester, and students paid a matriculation fee of \$10. His time at the University of Illinois was dear to him. In fact, all of his children and grandchildren were taught the words to the Illinois Loyalty and the Bone Yard songs at an early age. When he was in his 90s, he wrote a small book of his life for his family—the quotes below are taken from his autobiography.

"Our freshman year I thought I was a great football player, and I went out for freshman football. That's one of the worst mistakes I ever made because they had huge hulking ball players and the freshman team was the team that would serve as gun fodder for the varsity during daily practice. I switched to cross country and received my numerals but did not participate after my freshman year."

"The reason for this was the only failing grade I ever made in any of my classes. It was a course taught by CW Parmelee, the head of the department, and he decided that I must have been using somebody else's endeavors in one of the exams, so he flunked me—unwarranted. I did have one other flunk, in calculus. At the bottom of my blue book I wrote, 'I really don't know much about this course so I think I better take it over.' And the professor flunked me. Afterward, I talked to others in the class and they all felt the way that I did but did not admit it to the professor and all passed the course."

Failing two of his classes did not dampen his enthusiasm

for Illinois, however, and after completing his B.S. degree in Ceramics in 1937, he received his M.S. degree from Ohio State and returned to the University of Illinois for a job as a research engineer in the Ceramics Department.

"We lived at 707 Illinois Street, an easy walk to the Ceramics Building. My lab was back of the Kiln House, and I got involved in testing. My office was right above the Bone Yard. We had coffee available at all times and generally doughnuts also. It was a gathering place for a fair number of the members of the faculty and a lot of the graduate students."

Petersen married Gladys Wanner in 1940. They had three daughters, Karen, Ingrid and Kristin. He and his family moved from Illinois in 1951, when he took a position with Hunter Thomas Associates, a company that managed trade associations. He eventually became an owner and president of the company and remained there until he retired in 1979.

His daughters agree that he never forgot the financial assistance that enabled him to attend the University of Illinois. It was his hope that this scholarship would give future students in materials science the opportunity he had.

The first Petersen Scholarship recipient is Meghan McKelvey, a senior from Park Ridge, IL. She is concentrating in polymers with a minor in chemistry. Her favorite class at the University has been MSE 401 (Thermodynamics). "I liked how it was challenging," McKelvey said, "because it left me with a great sense of accomplishment when I could figure it out. I also liked how each concept built on the previous thing that we had learned, and it all connected in the end." Scholarships have been "extremely important" to McKelvey's education. "I really appreciate what the MatSE Department has done to help me get through college," she said.

Materials Science & Engineering Scholarships and Awards 2009–2010

Paul A. Beck Scholarship:

Sarah Treece

Clifton G. Bergeron Scholarships:

Arielle Gross

Stephanie Miller

Louis R. Berner Scholarships:

Lars Gunnar Bjaalie

Douglas Kelkhoff

Gerson B. Bilow Scholarship:

Hari Vigneswaran

Robert Bohl Scholarships:

David Broschka

Matthew Callahan

Eugene Cho

Christian Holmes

David Jung

*Otto Sr. and Mildred Capek
Scholarship:*

Elliott Rill

Caterpillar Scholarships:

Jonathan Bartelt

Sibel Leblebici

Stephen Menke

Earl J. Eckel Scholarships:

Scott Navel

Dylan Stradley

Ryan Trumbo

M. Laird and Charisann

Froberg Scholarship:

Varistha Chobpattana

Phillip H. Geil Scholarship:

Julie Vroman

Henry E. Grein Jr. Scholarship:

Donald To

MatSE Industrial Scholarship:

Siva Nalla

Robert E. and Karen Martin

Luetje Scholarship:

John Sadlik

Kevin Moore Memorial

Scholarship:

Jonathan Morales

G. Ronald and Margaret H. Morris

Scholarship:

Matthew Dejarld

James A. Nelson Scholarship:

Brian Choragwicki

Cullen W. Parmelee Scholarships:

Gavin Campbell

Zachary Dahl

John Glauber

Hsuan An Pao

Curtis Peterson

*Cullen W. Parmelee International
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Sibu Kuruvilla

Yost Smith

Kevin Spencer

Fredrick A. Petersen Scholarship:

Meghan McKelvey

Norman L. Peterson Scholarship:

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Ivan Racheff Scholarship:

Tyler Cain

John Docauer

Suzanne Sullivan

*Larry D. and Carol Rakers
Scholarships:*

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Alexander Hryn

*Lucille and Charles Wert
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Michael Brendel

Michael Campion

Aaron Gore

Amanda Homce

Evelyn Huang

Timothy Huang

Jason Lang

Brian Lin

Lisa Mazzocco

Jonathan Naber

James Young

Alfred W. Allen Awards:

Gavin Campbell

Varistha Chobpattana

Brian Choragwicki

John Glauber

Sang Heon Lee

Taegon Oh

*Materials Science and Engineering
Alumni Board Award:*

Robert Smith

Arthur L. Friedberg Award:

Pamela Wojtulewicz



2009 Alumni Awards



2009 Alumni Award Winners –
Christopher Schuh (Young Alumnus),
Timothy Hoefft (Loyalty),
Charles Childers (Distinguished Merit)

Distinguished Merit Award: Charles Childers

Charles E. Childers graduated from the University of Illinois in January 1955 with a B.S. in Mining Engineering. He began his employment with Duval Corp. at their potash mine in Carlsbad, N.M. He was called to active duty in the U.S. Army in May 1955 and served in the Army Security Agency in Fort Devens, Mass., and Bad Aibling, Germany. He returned to civilian life in May 1957. Childers left Duval in 1963 and went to work for International Minerals and Chemicals (IMC) Corporation. While at IMC, he served as Vice President and Resident Manager for the Canadian Potash Operations, President of IMC Coal in Lexington, KY, and Vice President of Potash Operations and Vice President of Expansion and Development for IMC Corp. headquarters in Northbrook, IL. In March 1987, he accepted the position of President and CEO of the Saskatchewan Potash Corporation (PCS). He led the company through its privatization and to its prominence as a globally competitive, profitable corporation. The exceptional growth of PCS under Childers' leadership received national and international recognition.

His honors include an award from Share Price Growth 100, the most respected stock-price improvement organization in North America and the Wall Street Transcript's Gold Award for CEO's in the fertilizer industry. He is a former Vice-Chair of the Fertilizer Industry Advisory Committee to the Food and Agriculture Organization of the United Nations. He is past president of the International Fertilizer Association, the world's largest fertilizer organization with more than 400 members in 82 countries. He served on the board of directors of the Conference Board of Canada, on the Business Advisory Council to the University of Saskatchewan College of Commerce and on the Junior Achievement of Canada. He also served on the board of the stock exchange corporations Quno, Battle Mountain Gold and KAP Resources. In the November 16, 1998, issue of Industry Week magazine, Childers was chosen as one of the Most Respected CEOs in North America. Perhaps his greatest honor came five and one-half years after his retirement. The Globe and Mail, a Toronto newspaper which is recognized as the foremost business newspaper of Canada publishes a monthly magazine entitled "Report on Business." In their April 2005 issue, one of the feature articles was "The 10 Greatest CEO's of All Time," which included Childers.

Loyalty Award: Timothy Hoefft

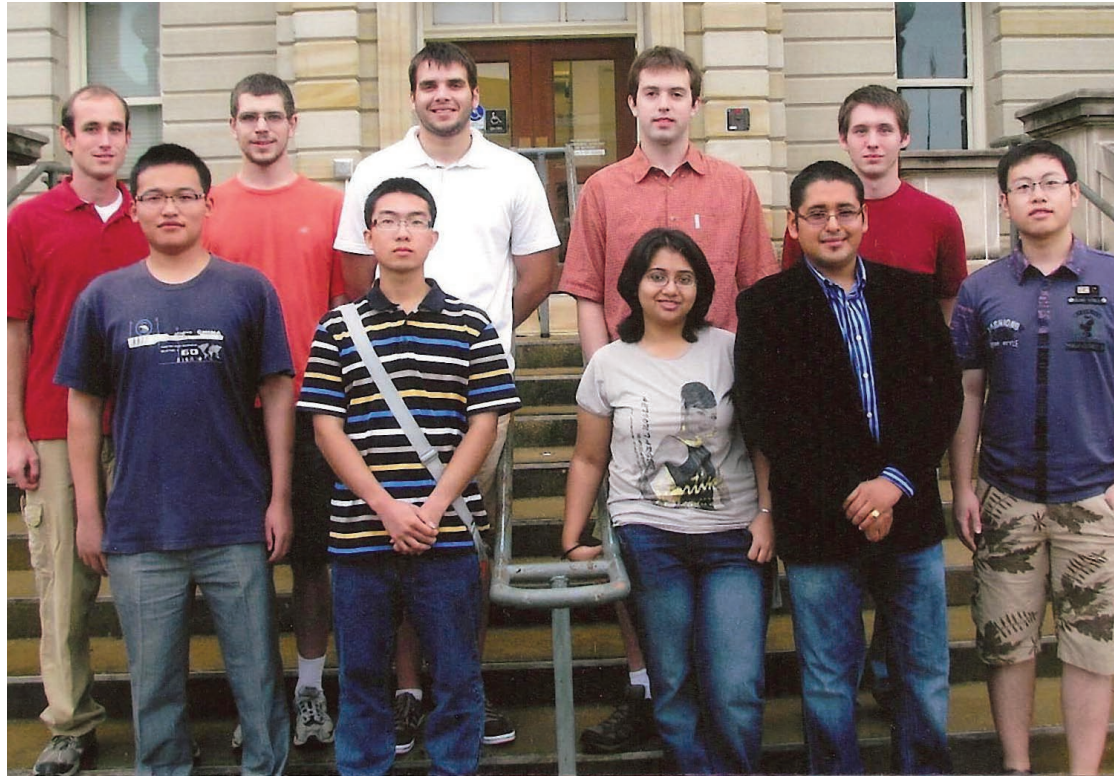
Timothy Hoefft graduated from the University of Illinois with a B.S. in Metallurgical Engineering in 1989. He worked in the steel industry for five years at LTV Steel and UNR-Leavitt Tube. In 1995, Hoefft joined Caterpillar's Metallurgical Rotation Program, where he held positions in Pontiac Fuel Systems and Aurora Wheel Loaders and Excavators Division. He has been located in East Peoria since 2000, where he has held positions of increasing responsibility in the Heat Treat and Materials Technology fields. He is currently Manager of the Machine and Components Materials Technology organization that supports the East Peoria, Decatur and Aurora, IL, Operations and Engineering organizations. He also serves as the Manager of the Metallurgical Engineering Rotational Program with responsibilities including recruitment, placement and governance of Metallurgical and Material Science Engineers throughout North America. He is receiving the Loyalty Award for his continued efforts with the Metals Lab in the MatSE Department at Illinois.

Young Alumnus Award: Christopher Schuh

Christopher A. Schuh is the Salapatas Associate Professor of Metallurgy in the Department of Materials Science and Engineering at MIT. He joined MIT in 2002, having received a B.S. at the University of Illinois at Urbana-Champaign in 1997 and a Ph.D. at Northwestern University in 2001, both in the field of Materials Science and Engineering. Schuh held the Ernest O. Lawrence post-doctoral fellowship at Lawrence Livermore National Laboratory from 2001 to 2002. His research is focused on structural metallurgy and seeks to control disorder in metallic microstructures for the purpose of optimizing mechanical properties. He works with disorder at many scales, including the atomic level (in amorphous metals), the nano-scale (in nanostructured metals) as well as at more conventional microstructural scales (in grain boundary engineered materials). Schuh's work has received international attention through several awards including the Robert Lansing Hardy Medal of the Metals, Minerals and Materials Society.

Donald W. Hamer Fellows

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. Below are the names of this year's fellows and their undergraduate institutions. Pictured in the front row, Changqian Yu (University of Science and Technology of China), Hefei Dong (University of Science and Technology of China), Debapriya Banerjee (Indian Institute of Technology Madras), Christian Espinoza (San Jose State University) and Jing Yan (Peking University). In the back row, Joshua Kacher (Brigham Young), Thomas Erikson (Rensselaer Polytechnic Institute), Lucas Osterbur (Hope College), Matthew Goodman (Iowa State University) and Zachary Smith (Louisiana State University).



Alumni Profile: Jim Drummond (BS Cer '69, PhD Cer '79)

I already had a dental degree when I started my Ph.D. at the University of Illinois at Urbana-Champaign. My graduate advisor was Professor Sherman Brown. I joined the University of Illinois-Chicago in the Restorative Department upon graduation. I was in a private dental practice in Blue Island, IL, working two days a week and became an Assistant Professor in Restorative Dentistry working part-time for three days a week. The Department of Restorative Dentistry is focused on the replacement of missing tooth structure, such as dental restorations (fillings) and crowns, so one of the main focuses is on dental materials which fits very well with my background in materials science.

Currently, I am the Program Officer of Dental Materials and Biomaterials in the National Institute of Dental and Craniofacial Research (NIDCR), a division of the National Institute of Health (NIH). This program supports basic and translational extramural research on dental materials and devices, dental implants, biocompatibility of dental restorative materials and biomaterials for craniofacial reconstruction. In addition, the program encourages research that is responsive to the product development efforts supported by the SBIR and STTR program. The focus of dental materials and biomaterials is the replacement and/or enhancement of missing tissues due to disease or trauma to restore normal function. NIDCR encourages basic and translational research to accomplish this goal in the areas of material science, engineering, nanotechnology, chemistry, imaging, computer science, biology, physics and interdisciplinary interactions.

My career advice to students would be to try as many areas/fields one has interest in to find one that really holds your interest.

Can you spare a minute? We would like to know how you are using your degree and feature your story in a future alumni newsletter. Contact Cindy Brya at brya@illinois.edu or (217) 333-8312.

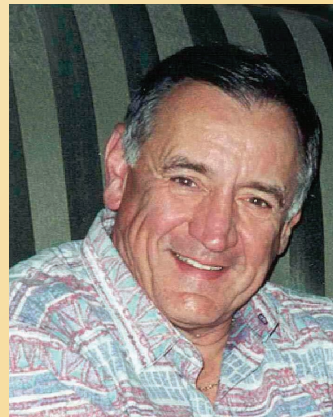
Class Notes

Miguel Garza Salinas (BS Met '61) and his wife, Mirthala, visited the University of Illinois campus on August 26. Salinas has had a successful career in Monterrey, Mexico. He worked for Alfa, one of Mexico's largest multi-industry conglomerates, for about 25 years, holding several positions in upper management. He was General Director of Nemek, a joint venture with Ford Motor Company to produce aluminum components/castings for the automotive industry. The company grew to become the largest operation of its kind in the world with 17 plants supplying aluminum castings for all automobile companies. In 1988 he formed his own consumer ceramic and housewares company. For the past decade, he has been consulting, working with start-up companies and marketing. His wife, Mirthala, is the President of the Board of Arts of Arte A.C., which promotes cultural events in Monterrey. They and their family, two sons and four grandchildren, live in Monterrey.



Mirthala and Miguel Garza Salinas

William (Bill) Payne (BS Cer '63, MS Cer '64) was honored for his investing activities and advocacy. The Angel Capital Association and Angel Capital Education Foundation chose Payne as the recipient of the 2009 Hans Severiens Award for his accomplishments in advancing the concept of "angel investing." The Hans Severiens Award was established in 2005 by ACEF and ACA to honor individuals whose actions demonstrate leadership in advancing the role of angel investing, in expanding entrepreneurship and whose accomplishments influence and benefit the angel investment industry as a whole. Angel group investing—angel is an old term originally given to individuals who invested in theatre productions—is a special type of venture investing in which investors typically use their own assets (as compared to more well-known venture capitalist companies that make investments from a pool of others' assets) and often act in groups or networks to combine their funds and information. Payne was a ceramic entrepreneur in the 1970s and funded Solid State Dielectrics Inc. He served on the ACerS Board of Directors for two decades and was president from 1989 to 1990. The Society selected him to be a Distinguished Life Member in 2000.



Bill Payne

Les Kramer (BS Met '66) visited the University of Illinois campus on August 31 to give a special seminar on carbon nanotube buckypaper applications for aerospace structures. Kramer is Director-Group Technical Staff at Lockheed Martin Missiles and Fire Control in Orlando, FL. He is responsible for research and development in the area of advanced materials and structures. His recent initiatives include materials selection for Ocean Thermal Energy Conversion (OTEC), aerospace application of multifunctional nanomaterials into airborne vehicles, morphing structures, infrared electro optics, EMI shielding, specialty coatings, advanced energy sources, and a range of other nanoscale material uses.



Les Kramer

Ken Hang (BS Cer '66, MS Cer '67, PhD Cer '70) visited campus on October 19. He is a research fellow at DuPont, working on electronic materials at Research Triangle Park in N.C. Prior to



Ken Hang

Class Notes continued



Diane Chong (MS Met '83, PhD Met '86) and **Jennifer (Wenthe) Weber** (BS MatSE '04) attended the Engineering at Illinois reception at the Mill Creek Country Club in Mill Creek, WA, on July 29.

Katy (Gordon) MacGregor (BS MatSE '02) welcomed her second child, Adyson Elizabeth, on September 26. She weighed 6lbs. 11oz. and is 19 inches long. Big brother, Jack, is especially proud of his new baby sister!



Robert Shepherd (BS MatSE '02, PhD in progress) married Jen Hanson on September 5 in Roseville, MN. Both are completing their doctorate degrees in MatSE at the University of Illinois.



David and Anne Payne with **Toshihiko Tani** (MS Cer '93, PhD Cer '94). Tani is a senior executive engineer for Toyota Research Institute of North America.



joining DuPont, he worked at RCA Laboratories. He is well versed in a number of different areas, including ceramic and glass materials, phosphor materials, semiconductors and power transistors. He has about 70 patents. Hang was in town to visit his father, Dan Hang, an emeritus professor of nuclear engineering at the University of Illinois.

Sanak Mishra (MS Met '70, PhD Met '73) was elected as President of the Indian Institute of Metals (IIM) for 2009-10. He has been a member of its National Council for more than 10 years and was conferred its Honorary Membership in 2005. The Indian Institute of Metals is the premier professional body in India of Metallurgists and Materials Scientists engaged in industry, R&D and academia.

Robert P. Walson (PhD Met '74) visited the University of Illinois in July. He is retired from Butler University. He still helps undergraduate students with research using the Scanning Electron Microscope and Energy Dispersive X-ray Analysis. He has also helped high school students with samples in the BugScope program at Beckman Institute. Walson has his own consulting company (www.walsonandco.com) and does forensic engineering and science projects.

Robert (Bob) Rita (BS Cer '70, MS Cer '72, PhD Cer '76) retired in 2008 and moved to Evanston, IL. He previously worked as the senior material scientist for Dielectric Laboratories.

Atif Odeh (BS Met '93) is principal metallurgist and president of ATRONA Material Testing Laboratories Inc. in Machesney Park, IL. On July 31, ATRONA acquired a polymer and materials research lab, allowing the company to offer more testing capabilities.

Neil Manning (PhD Met '92) will be part of the new expansion working for ATRONA Test Labs as Failure Analysis Engineer.

John J. Schwan (BS MatSE '97) started his career at Andersen Consulting and then left to build his own IT consulting firm, Solstice Consulting. Solstice employs more than 70 people across the Illinois area.

Ashley Predith (BS MatSE '99) has started a new position at the University of Maryland as the Associate Director for Programs for an Energy Frontier Research Center.

Aylin Sendemir-Urkmez (PhD MatSE '06) is an assistant professor in the Bioengineering Department at Ege University in Izmir, Turkey. She had her second child last year, a girl named Alara.

Jill Franke (BS MatSE '09) was selected for the SWE Collegiate Poster Competition. In addition, the SWE Team Tech project she has been involved with was selected to go to nationals to compete.

Support the Future of MatSE and the University of Illinois

Brilliant Futures, the Campaign for the University of Illinois, is an ambitious undertaking to raise \$1.5 billion. The resources generated through the Campaign will ensure that Illinois continues to create a better world through our teaching, research and public engagement. Gifts to the campaign will provide more scholarships and fellowships, endow more faculty positions, improve programs and research and update facilities across the campus.

Brilliant Futures are what happens when you give someone a chance. When you make a gift, of any size, to the University of Illinois you create an endless ripple effect—one life brightening another, then another, and on for generations. Your gift can become something that is larger and more powerful than all of us. The campaign priorities include:

Leadership for the 21st Century

Leadership is learned through excellent programs and experiences both inside and outside of the classroom. The campus is focused on enhancing students' intercultural, research, creative and experiential learning opportunities. The success of these programs will build on a great Illinois tradition of fostering innovative leadership.

Enhance Academic Excellence

Attracting and retaining diverse, exceptional faculty drives our academic excellence, as do educational programs that attract excellent, ambitious, diverse students. We must also ensure the wise use of financial and other resources to gain the greatest impact.

Pursue Knowledge and Breakthrough Innovation

Creating knowledge and innovative uses of existing knowledge are essential to the research mission of the institution. The campus must enable discoveries to occur in new and different ways.

Foster a Transformative Learning Environment

A vibrant university fosters a vibrant, dynamic learning environment. Essential to this environment are world-class facilities, a culture of conservation and sustainability, the development of living/learning communities that augment the traditional classroom and a culture that embraces diversity across the campus.

Ensure Greater Access to the Illinois Experience

We seek to improve access to the Illinois experience by increasing the diversity of the student population, providing additional merit- and need-based aid, and increasing the use of online learning alternatives.

To learn more about the Brilliant Futures campaign, visit brilliantfutures.illinois.edu



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In Memoriam

Bernard David Bard (MS Cer '39) passed away July 3, 2009, in Glenview, IL. He is survived by his wife of 69 years, Lillian, and three children.

Laverne Ekholm (BS Cer '37) died on June 1, 2009. After graduating from the University of Illinois, he was hired by Carnegie Illinois Steel Corporation, now United States Steel Company, to work at the Duquesne Works. He progressed through the professional ranks at the steel mill and later at the headquarters in Pittsburgh, retiring from U.S. Steel as Manager of Steel Process Metallurgy after 40 years with the company. After retirement, he consulted with the International Executive Service Corps and worked in Egypt and Brazil. He and his late wife, Glesna, loved to travel. After his daughter graduated from college, he obtained his pilot's license and IFR rating. They logged more than 100,000 miles visiting friends and family across the country in his Navion (8999H) airplane. He was an active member of the First Evangelical Free Church in McKeesport. In 1995, he published the Lindeman Book, a 200-page genealogy of his mother's family starting in 1620. In 2005 he finished his autobiography. His last work was an analysis and new interpretation of the Book of Genesis.

Joseph Lane (BS Met '43) passed away on May 20, 2009. He was a major contributor to the scholarship fund honoring his former professor, Earl Eckel. He and his wife, Wyvona (PhD Chemistry '46) created the Lane Lecture Fund in 1999 to encourage collaboration and interaction between MatSE and Chemistry departments by bringing a guest speaker to campus whose expertise crosses both disciplines. Lane received his Ph.D. from MIT in 1950. He was staff metallurgist for the National Materials Advisory Board. He enjoyed photography, repairing violins and traveling across the globe with his orchestra, the VA-National Medical Musical Group. His wife passed away in June 2007.

Frank Robert Sutherland (BS Cer '47) passed away December 31, 2008, in Kokomo, IN. He was a ceramic engineer for Cannelton Sewer Tile Co. in Cannelton, IN, Union Carbide Corp. in Cleveland, Gerber Pottery and Haynes Stellite, both in Kokomo. Before retiring,

he pursued his true passion, that of home construction and commercial and residential remodeling. Sutherland built his family's home in 1963. He enjoyed golf, fishing, music and family. He is survived by his wife of 62 years, Annette and four children.

James E. Young (BS Cer '48) died June 18, 2009. He had helped shape Rutgers University, Newark, from a collection of schools and colleges into a major research university. He joined Rutgers in 1970 as dean of the Camden College of Arts and Sciences and became chief administrator in 1972. The following year, he came to Rutgers University, Newark, as its first provost. Under his leadership, Rutgers in Newark developed the diversity that would, beginning in the mid-1990s, establish it as the most diverse national university campus in the United States. Young also was instrumental in the establishment of the Council for Higher Education in Newark (CHEN) and in the development of joint programs among the four public higher education institutions in Newark: Rutgers, the University of Medicine and Dentistry of New Jersey, the New Jersey Institute of Technology and Essex County College. He resigned as provost in 1982 to return to his first love, teaching, this time at the College of Engineering in New Brunswick. Upon his retirement in July 1993, he was named a distinguished professor emeritus of engineering. Before coming to Rutgers, Young was a professor of engineering at Alfred University from 1962 to 1967, where he chaired the Ceramic Engineering Department and produced major research in the structural and architectural uses of heavy clay products. He earned his B.S. at the University of Illinois in 1948 and his Ph.D. at Alfred University in 1961.

John Joseph Gilman passed away September 10, 2009. He was born in Green Bay, WI, in 1925. Gilman began his career in Research at General Electric, and taught metallurgy at the University of Illinois in the 1960s. He left the University to be the founding Director of the Allied Chemical Corp. (now Honeywell) Materials Research Center in Morristown, NJ. He went on to become the Director of Research for Amoco Corporation and Senior Scientist at the Lawrence Berkeley Laboratory. He was an adjunct professor at the UCLA.

Gilman was a member of the National Academy of Sciences and the author of several patents, books and technical articles in the areas of materials science and management. He was preceded in death by his loving wife of 23 years, Gretchen Sutter Gilman. He is survived by children Pamela, Gregory, Cheryl, Brian; and stepchildren Katheryn Sutter, John Kapas and Nicholas Kapas.

Lawrence (Larry) R. Happ (BS Met '68) passed away September 5, 2009, at his home in Nixa, MO. He was president of L&E Enterprises Incorporated in Nixa. He was very proud of his degree and his work as an engineer. He is survived by his wife, Edna, the love of his life. They enjoyed dancing, traveling and spending time with their seven grandchildren. He also is survived by his three sons, Brian, Don and Greg. He was a very active member of St. Francis of Assisi Catholic Church.

Eric J. Villotti (BS Cer '84) passed away May 9, 2009, after a courageous battle with cancer. He was an active member at Calvary Church in Naperville, IL, being an usher and in the Jr. High Ministry. He was an account executive at ST Microelectronics in Schaumburg. He is survived by his parents, his wife, Carie, and his children, Nathan, Luke, Geena and Sophia.

Donald G. Ulmer (PhD Met '88) passed away July 20, 2009, following a tenacious battle with cancer. Following graduation from the University of Illinois, he moved to California to work in the aerospace industry, most recently with Aerojet-General. He leaves behind his wife, Susan, and two sons, Taite and Jesse. He will always be remembered as a kind, soft-spoken man who loved his family above all else.



Daniel C. Lubben (BS Met '80, PhD Met '87) On October 12, 2009, Dan Lubben died unexpectedly while doing something he loved, riding his mountain bike on his way to Almaden Quicksilver Park in San Jose, California.

Dan was awarded the American Vacuum Society Graduate Student Prize in 1986 and completed his Ph.D. in 1987 under Professor Joe Greene. His thesis was entitled "Fundamental Mechanisms of Photo-Stimulated Surface Reactions During Laser-Induced and Laser-Assisted Crystal Growth."

He was a Postdoctoral Research Associate in the Coordinated Science Laboratory at the University of Illinois from July 1987 to October 1991. He was a Visiting Scientist at Oak Ridge National Laboratory in the Solid State Division from February to April 1987. He later joined Oak Ridge National Laboratory as a Research Staff Member and Physicist in the Solid State Division.

In 1997 he left Oak Ridge, Tennessee, for a position at Applied Materials, Inc. in Santa Clara, California. By the time of his death, he had reached the position of Distinguished Member of the Technical Staff. While employed at Applied Materials, he held two patents: 1) Prediction and Compensation of Erosion in a Magnetron Sputtering Target, and 2) Self-Ionized and Inductively-Coupled Plasma for Sputtering and Resputtering.

He was a long-time member of the American Vacuum Society and Materials Research Society. He sat on the board of directors for the Tennessee Valley Chapter of the AVS from 1992 to 1997, serving as Vice President in 1995 and President in 1996. He was an active referee for the journals "Thin Solid Films" and "Journal of Vacuum Science and Technology." He gave many invited lectures and had numerous publications.

Dan was an avid athlete, enjoying many physical activities including snowboarding, hiking and mountain biking. He is survived by his wife Connie Krashoc, daughter Nora, parents Marilyn and Bud, five brothers and sisters and numerous nieces and nephews. Services were held on October 18, 2009, at Oak Hill Funeral Home, and Dan was laid to rest in the care of his family in San Jose, California.

Thank you for your support of MatSE!

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, 2008, and June 30, 2009.

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@illinois.edu, (217) 333-8312. Individuals listed in **boldface** are first-time donors to MatSE. Thank you for your support!

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Gerson Bilow (BS Met '65, MS Met '67)
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and Barbara Burk

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Therese Hendricks (BS Cer '77)
James (BS Cer '70, MS Cer '72, PhD Cer '74)
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Maurice Murphy (BS Met '41)
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Lawrence (BS Met '85, MS Met '88)
and Carol Rakers

Ingrid Reuter

Ian and Victoria Robertson
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Benefactors—\$500 to \$999

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Robert (BS Met '52) and Carol Pounds
Gino and Carolyn (BS Cer '74) Primus
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Douglas Ruhmann (BS Met '64)
F. Robert Setlak (BS Met '64)
Victor Tennyery (BS Cer '54, MS Cer '55, PhD Cer '59)
David (BS Met '90, PhD Met '96) and Heather Teter
Zhonghui Wang (PhD MatSE '98) and Liping Zhu

Sponsors—\$100 to \$499

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Chintan (BS MatSE '95) and Anjula Amin
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Michael (PhD Met '92) and Carolyn Bench
Stephen Boaz (BS Cer '81)
Alfred Bonfiglio (BS Met '60)
Donald Boone (BS Met '57, MS Met '59,
PhD Met '62)
Paul (PhD MatSE '98) and Colleen Braun
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Albert Chow

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and Eileen (BS Cer '81, MS Cer '82) De Guire

Harvey DeFord (BS Cer '77, MS Cer '85, PhD MatSE '98) and Susan Saraceno

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Lorraine Francis (MS Cer '87, PhD Cer '91)
Matthew (BS Cer '92, PhD MatSE '96) and Dana Frey
James Gaebe (BS Met '59)
Lawrence Gagin (BS Cer '42)
William Gerberich

**Chris Goodbrake (BS Cer '70, MS Cer '75,
PhD Cer '78)**

Steven Gorbalkin (BS Met '81, PhD Met '87)
Mark (BS Met '80) and Beverly Gorman
Paul Guttmann (BS Cer '68)
Edgar Hack (BS Met '50)
David Hanson (BS Cer '60)
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Lance Haworth
Stacey Henning (BS Cer '89)
James Hobart (BS Met '58)
Bryan Hockman (BS Met '82)
Lowell (BS Met '63) and Ruth Hoffman
Dale Holloman (BS Mining '58)
Michael Howe (BS Met '76)
Ernst Huschke (BS Met '55)
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PhD Met '71)

Sreenivas Jayaraman (PhD MatSE '05)

Elwin Pete Johnson (BS Cer '56, MS Cer '57,
PhD Cer '60)
Gerald Johnson (BS Met '62)
Betty Kopley
Drew Kofahl (BS Met '97)
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Mary Lou (BS Cer '84) Morris
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Jessica Nelson (BS MatSE '99)
Michael Nevitt (BS Met '44, PhD Met '54)
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Mark Ohls (BS Met '82, MS Met '85, PhD Met '90)
Michael (BS Met '90) and Elizabeth Pershing
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Grant Pomeroy (BS Cer '96)
Bryan Pratt (BS MatSE '98)
Charles Pregaldin (BS Cer '48)
Fred Ramquist (BS Cer '72)
Jeremy Repede (BS MatSE '01)
Elizabeth Richards (BS Cer '75, MS Cer '77,
PhD Cer '81)
James Michael Rigsbee
Robert Rita (BS Cer '70, MS Cer '72, PhD Cer '76)
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Lian-Tay Shiang (PhD Met '85)

Alvin Shulman (BS Met '52)
W. Robert Siddall (BS Met '65)
Richard Siegel (PhD Met '65)
Richard Skolly (BS Met '78)
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J. L. Willett (PhD Met '88)
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Greg Zeigler (BS Cer '87)
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Michelle Bielick (BS MatSE '04)

Cindy Brya

William and Ava Cooper

Robert (BS Cer '49, MS Cer '50)

and Carolyn Degenkolb

Lisa Delloma

Joseph Dow (BS Met '62)

Abigail Ebbing (BS MatSE '01)

Thomas Faro (BS Met '65)

Roger Francoeur (BS Met '72)

Susan Freeman (BS Met '84)

Thomas Furlan (BS Met '65)

Chad Gentry (BS Met '97)

Robert Gottschall

Jeffrey Grabowski (BS Cer '96)

Kurt Greissing (BS MatSE '95)

Lawrence and Edna Happ (BS Met '68)

John (MS Met '92) and Marsha Haworth

William Heitmann (BS Met '53, MS Met '55,

PhD Met '61)

David and Patricia Herber

Dee Honn (BS Cer '77)

Scott Hughes (BS Met '74, MS Met '75)

Bruce Johnson

Joseph Kaplan (BS Cer '81)

David Kline (BS Met '82, MS Met '85)

Carl Kotecki (BS Cer '77)

Donald (BS Cer '49, MS Cer '53) and Frances Kraft

Ralph (BS Cer '49, MS Cer '53) and Virginia Kraft

Cynthia Kramer

Sam (BS Met '48, MS Met '49) and Pauline Leber

Arnold Litman (BS Met '46)

Jeffrey (BS Met '82, MS Met '87) and Laurel Logas

Todd Martin (BS MatSE '03, MS MatSE '05)

David McDevitt (BS Met '79)

Jeffrey (BS Met '79) and Nancy Moore

George Morris (BS Met '42)

William Muhlstadt (BS Cer '62, MS Cer '68)

Ben and Martha Ohashi

John Olson (MS Cer '93)

Trudy Painting

James Peters (PhD Met '71)

Anthony Polak (MS Met '71, PhD Met '77)

Robert Radtke (BS Cer '63)

Harold Rolseth (BS Met '53, MS Mining '56)

Dawn Sandone

Gary Schnittgrund (BS Cer '70, MS Cer '71,

PhD Cer '75)

Norman Schoepel (BS Cer '37)

M. Vance Seitzinger

Rhonda Seitzinger

F.P. Shonkwiler (BS Cer '43)

Rachel Silverman

F. Xavier Spiegel (MS Met '63)

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Alumni and Students Enjoy Casual Gathering

Members of the MatSE Alumni Board enjoyed barbeque and conversation with undergraduates and graduate students at Famous Dave's in Champaign on September 24. Earlier in the day, board members participated in a panel discussion during MSE 182—Introduction to Materials Science and Engineering. They talked to freshmen about their career path, what their companies look for in potential employees and the pros and cons of graduate school. The fall board meeting was held on September 25 at the Beckman Institute.