



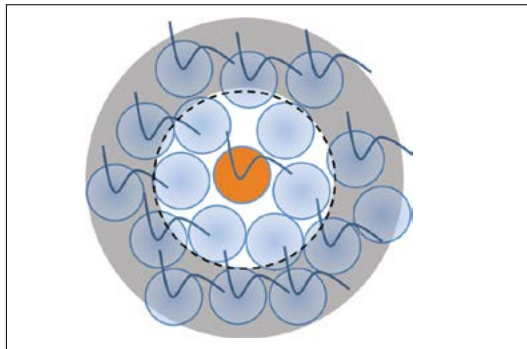
# MATERIALS

Dynamics of  
amorphous materials

**In this issue**

**WELCOME**  
new faculty

**THANK YOU**  
for your support



04

Materials

Dynamics of amorphous materials



05

Faculty

Welcome new faculty



13

Thank you

for your support

Greetings..... 03

Faculty ..... 04

Graduate Students ..... 08

Undergraduates..... 10

Donors..... 12

Alumni ..... 16



**MATSE ALUMNI NEWS**

Department of Materials Science and Engineering

**David Cahill**

Department Head

**Cindy Brya**

MatSE Alumni News Editor

**Letters, comments and newsletter submissions**

MatSE Alumni News  
 Department of Materials Science and Engineering  
 University of Illinois at Urbana-Champaign  
 201B MSEB, MC-246  
 1304 W. Green Street  
 Urbana, IL 61801  
 (217) 333-8312  
 brya@illinois.edu  
 matse.illinois.edu

## Greetings from Urbana



We live in an exciting time for materials research. The rise of interdisciplinary research and the astonishingly rapid advances in computational methods and tools for physical measurements have fundamentally changed the research landscape. The drivers for innovative solutions for health, environment, energy, information, transportation, food, and infrastructure have never been more compelling and are attracting extraordinary talent to the field.

The outstanding reputation of the research activities in MatSE is built on the scholarship of faculty, Ph.D. students, and post-doctoral research associates. Excellence in scholarship can take many forms. We embrace advances in fundamental understanding and the building of new capabilities with as great enthusiasm as research that translates basic work into practice and innovations that result in a highly visible impact on engineering practice. The most innovative, “ahead-of-its-time” research is, however, often difficult to support through federal grants or contracts with companies. The MatSE Department is fortunate to have had alumni establish four endowed professorships that provide flexible funding directly to the faculty so that they can explore high-impact high-risk research.

The impact of endowed scholarship funds can be seen in the recent NYTimes College Access Index. The Urbana campus ranks near the top of the Big Ten schools at #49 (slightly behind the University of Michigan) in commitment to lower income students. The ranking is based on several metrics including net cost after scholarship and grant support. Interestingly, 6 of the 7 top slots are University of California campuses. Increasing access and opportunity for lower-income students is a key goal of the Engineering Visionary Scholarship Endowment Fund in MatSE. We are proud of the financial help we can currently provide to undergraduate students through our 27 endowed scholarship funds that enable us to award approximately \$177,000 in scholarships each year.

As 2015 comes to a close, I would like to thank our donors for their support over the past year. Your gifts help us achieve our educational mission and contribute to our reputation as one of the premiere materials science and engineering departments in the nation.

Sincerely,

A handwritten signature in white ink that reads "David Cahill".

David Cahill  
Willett Professor and Head

# SCHWEIZER TO RECEIVE HILDEBRAND AWARD

for theoretical work in complex  
liquids, glasses and gels



Ken Schweizer

Ken Schweizer, G. Ronald and Margaret H. Morris Professor of Materials Science and Engineering, has been selected to receive the 2016 Joel Henry Hildebrand Award in the Theoretical and Experimental Chemistry of Liquids from the American Chemical Society. He receives the award "for the pioneering development of microscopic predictive and unified theories of the structure, phase behavior and slow dynamics of complex liquids, glasses and gels."

Complex liquids, glasses and gels include a vast array of materials-relevant soft materials, including polymers, colloids, nanoparticles and liquid crystals. Gels and glasses are nonequilibrium solid amorphous materials with a disordered liquid-like structure. Glasses form when a material becomes so cold and/or dense that its molecular constituents have no room or thermal energy to move. Gels form when the material building blocks stick together via strong attractive forces, resulting in a network of kinetically stable connections that span space and can store stress.

Gels and glasses have widespread relevance in materials applications. For example, polymer glasses are used in structural materials, plastics, organic electronics, ionic-conductors, thin film coatings and eyeglasses (e.g., polycarbonate lenses). Glass or gel forming nanocomposites composed of polymers and nanoparticles are relevant to mechanically reinforced rubber, a hybrid organic-inorganic material that underlies all of tire technology. In addition, glasses arise in medicine and bio-related areas, such as

pharmaceuticals (drug dissolution kinetics), tissue preservation, folding of proteins and aggregation triggered diseases. For example, mixtures of DNA and proteins, and misfolded biomolecules, can effectively form solid gels, which play a major role in neurodegenerative diseases such as Alzheimer's and cystic fibrosis.

"My theoretical work develops, and is applied to understand experiment, new statistical mechanical ideas and methods to predict, starting at the molecular level, how and why liquids of many types lose their ability to flow, thus transforming into 'hard' (glass) or 'soft' (gel) amorphous substances on the experimental time scale," Schweizer said. "The 'glass transition' problem is of great fundamental and interdisciplinary scientific interest (physicists, chemists and engineers of many types), and is also important in the realm of practical materials design." For example, "When the glass forms, we are now able to calculate reasonably well its elastic strength, which is typically  $\sim 1$  GPa for molecular and polymeric materials," Schweizer said. "Our approach is presently predictive for bulk colloidal, molecular and polymeric materials." The group has begun to extend their ideas to understand how glassy dynamics and vitrification is deeply modified when the material is confined into thin films far below one micron thick. Here both spatial confinement and interfacial effects can strongly modify the rate at which molecules move as a function of their location in the film.

Schweizer has also developed predictive theories for the polymer glass state (thermoplastics), a topic of high engineering relevance. Since glasses are not in thermal equilibrium, their properties change with time, often with bad consequences in applications (e.g., the material becomes more brittle). This process is called "physical aging." "We have developed ideas for predicting how the physical aging process proceeds dynamically, where the relevant time scale can be years," Schweizer said. This aspect of the work connects with materials reliability concerns.

More generally, the nanometer scale motion of the building blocks



# Faculty Achievements



Shen Dillon

Shen Dillon received the 2015 Robert L. Coble Award for Young Scholars from the American Ceramic Society. The award recognizes outstanding scientists who are conducting research in academia, industry or government-funded laboratories. Dillon's research seeks to understand and exploit fundamental thermodynamic and kinetic relationships at interfaces in order to inform improved design of energy conversion and storage systems.



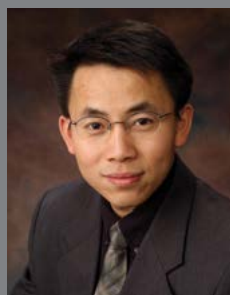
Jian-Min Zuo

Jian-Min (Jim) Zuo received the internationally renowned Ernst Ruska Prize from the German Society for Electron Microscopy. Zuo receives the prize for his improvement of electron diffraction techniques and analysis.



Andrew Ferguson

Andrew Ferguson received the Junior Faculty Award in Computational Chemistry from the American Chemical Society for fall 2015. He is one of four awardees named by the Computers in Chemistry Division. The award recognizes Ferguson's use of physical chemistry motivated computational models in the rational design of hepatitis C virus vaccines.



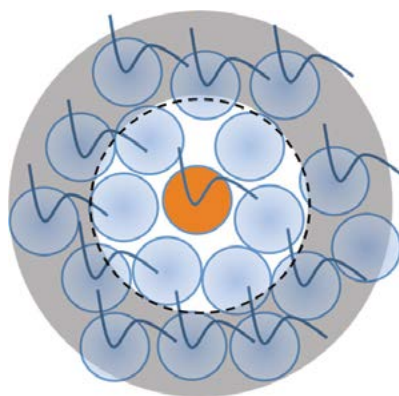
Jianjun Cheng

Jianjun Cheng and John Rogers were among four faculty in the College of Engineering selected for the first class of Faculty Entrepreneurial Fellows. Fellows will focus on bringing their work to the world by developing a technology and testing its commercial potential. Cheng's team will explore the potential market for a new type of 3D printing material known as a malleable polyurea thermoset. Rogers' team will design and manufacture prototype near-field communications devices that are small and flexible enough to mount on a person's fingernail, earlobe or tooth.



John Rogers

of polymers (monomers) in glasses is highly activated, and the Schweizer group has shown this process determines the leading order bulk mechanical (e.g., stress-strain relationship) response of glassy materials subjected to large stresses and strains. This aspect is relevant in low temperature processing, and in applications where the material experiences external deformation while in service. The Schweizer group has formulated an understanding of how increasing stress massively speeds up molecular motions in polymeric glasses (e.g., polymethylmethacrylate (PMMA), also known as "plexi-glass"), ultimately leading to plastic flow or yielding. "For polymers, a unique effect occurs at large deformation since they are connected but flexible chain molecules that can deform. We predict that when the latter occurs, local motion slows, which triggers a 'strain hardening' mechanical response that helps stabilize polymer materials against fracture and other failure processes," Schweizer said.



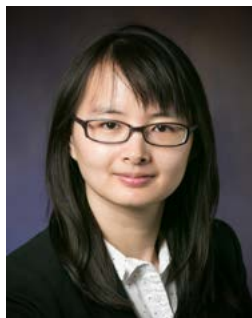
Atoms, colloids or molecules transiently trapped by their local neighbors in an amorphous glassy state.

Schweizer received his Ph.D. in physics from the University of Illinois in 1981. Following a postdoctoral appointment at AT&T Bell Labs and seven years as a senior research scientist at Sandia National Laboratories, he joined the MatSE faculty in 1991. He also is a faculty member in the Chemistry and Chemical & Biomolecular Engineering

departments. His honors include the Polymer Physics Prize and the Dillon Medal from the American Physical Society, and the Tau Beta Pi Daniel C. Drucker Eminent Faculty Award and Everitt Teaching Excellence Award from the College of Engineering. He is a Fellow of the American Physical Society.

Schweizer will receive the Joel Henry Hildebrand Award at the American Chemical Society national meeting in San Diego on March 15, 2016.

## WELCOME New Faculty



### Qian Chen

Qian Chen received her Ph.D. in Materials Science and Engineering from the University of Illinois in 2012. Her doctoral research focused on developing new “bottom-up” strategies for materials construction. She was among the first to encode multiplexed information into colloids in a “Janus” or

“patchy” fashion and to assemble them into functional materials. Prior to joining the MatSE faculty, Chen was a postdoc at the University of California, Berkeley. Returning to Illinois was an easy decision for Chen. “Here was where my science and my scientific dream truly started,” she said, “and I know from my day-to-day experience what a great place this department is to encourage and support young professors and scientific research.”

She is teaching surface and colloids (CHEM488/MSE480) to students in engineering, chemistry, and food science and human nutrition. The fall semester has been busy for Chen. “I’ve already sat in one Ph.D. thesis defense as a committee member, led a Ph.D. student qualifying exam, given the opening research talk in the MatSE soft materials seminar, and of course started a growing lab and enjoyed teaching and various interactions with students,” she said.

The Chen research group works on constructing artificial materials in a way that they can mimic the features of biological matter.

The group’s focus is on “the new paradigm of design, fabrication, imaging, and fundamental science of active soft matter – the artificial materials analogous of smart living systems that can self-replicate, self-regenerate, eventually evolve in structure and function with ever-changing external environment.” Chen takes on the role of a photographer to “videotape” how nano-sized objects move and transform in their native liquid environment. “Previous photographers can go down to hundreds of nm, but we are going for nanometer, smaller even than the size of most proteins,” Chen said.

Chen’s husband, Yingjie Zhang, just finished his Ph.D. at the University of California, Berkeley, and is a Beckman Fellow at Illinois. They have a 20 month-old daughter, Angeline (Angie).



### Pishane Huang

Pinshane Huang received her Ph.D. in Applied Physics from Cornell University. In her postdoc research at Columbia University, she used scanned probe and optical microscopy to probe nanoscale inhomogeneity in 2D materials and superconductors.

Her decision to join the University of Illinois was influenced by the breadth of facilities available for her research. “I think MatSE at Illinois

is exceptional because it combines great faculty with a wide range of facilities in the MRL. I was surprised at how many people including faculty, postdocs, and students were sharp and curious, yet welcoming,” she said. Her research lab is being built on the first floor of the MRL.

The Huang group uses transmission electron microscopy to image materials one atom at a time. “I mainly study 2D materials, which are single atomic layers of graphite, boron nitride or other layered materials,” Huang said. “These systems, because they are so thin, can be probed with unprecedented clarity and precision.”

She is teaching Introduction to Transmission Electron Microscopy (MSE 184), which has around 40 graduate students and a few undergraduates. “I’m delighted to be teaching this course, not just because it’s squarely in my area of expertise, but also because the students seem incredibly motivated and excited about the material.”

Her husband, Arend van der Zande, is an assistant professor of Mechanical Science and Engineering at Illinois.



### Robert Maass

Robert Maass received his Ph.D. in Materials Science from the École Polytechnique Fédérale de Lausanne (EPFL) in Switzerland. During his doctoral work, Robert designed and built an in-situ micro-compression set-up that he used to study

small-scale plasticity with time-resolved Laue diffraction at the Swiss Light Source. He worked as a postdoc at the Swiss Federal Institute of Technology (ETH Zurich) and the California Institute of Technology. He was as a specialist management consultant for metals at McKinsey & Co. and a junior research group leader at the University of Göttingen before joining the MatSE faculty at Illinois.

He chose MatSE at Illinois because of the department’s international reputation and the “large number of wonderful colleagues” he would be working with as a faculty member. “Knowing that the department has a very competitive graduate program, I also knew that the pool of students will be extraordinary,” he said.

His research focuses on the fundamentals of plasticity across all length scales in both crystalline and amorphous materials. “Plasticity of defect dominated materials is an old, but exciting problem with many unsolved questions,” Maass said. His group is very interested in the collective properties of defect dominated materials and what is going on in disordered metallic structures upon shear localization. “There is a lot we do not understand yet,” he said, “and with my research I hope to unravel mechanisms that help predictive materials modelling.” One of his current activities is to combine extraordinary small scale properties with the bulk strength of metallic glasses.

This semester he is teaching Thermal and Mechanical Behavior of Materials (MSE 406) to 110 students.

His wife, Renske van der Veen, is an assistant professor in the Chemistry Department. Their daughter, Frederica, was born in July. Maass enjoys his daily commute. “I love to go by bike to work,” he said. “The short ride in the morning sun to MSEB has become a nice routine. Pouring rain on my way back home does not change that...”

# Ferguson group charts ‘fitness landscape’ to fight hep C virus

Borrowing from several statistical science models, an interdisciplinary team of researchers from the University of Illinois has developed a novel computational approach for massively accelerating the search for a hepatitis C vaccine.

“Hepatitis C virus infects 170 million people and kills 350,000 annually,” explained Andrew Ferguson. “Effective drug treatments have recently become available, but their high cost makes them effectively unavailable in the developing world where most infections exist.

“A vaccine offers the best hope for global control of the epidemic, but despite 20 years of study, none yet exists. A challenge to vaccine design is that we do not know what parts of the virus we should target to best protect the host. In other words, we do not know how to hit the virus where it hurts. In this work, we present an approach to systematically identify vulnerable targets and computationally design hepatitis C vaccine candidates predicted to cripple the virus.”

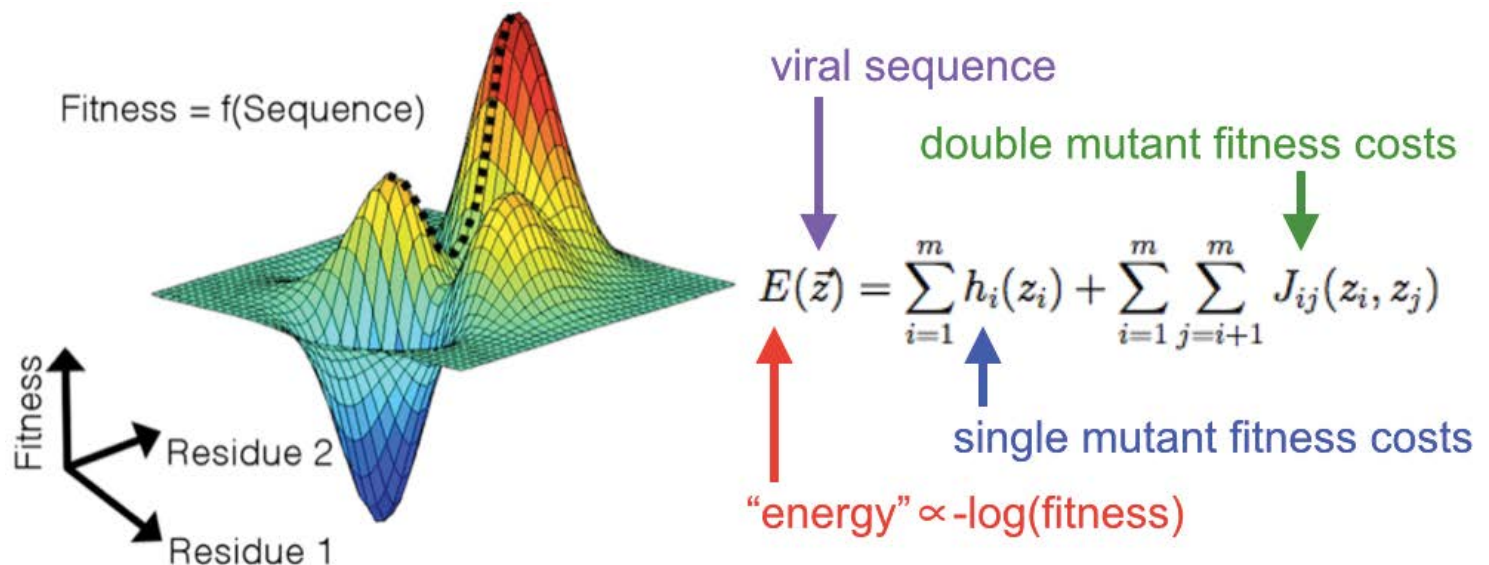
Applying so-called “spin glass” models from statistical physics commonly used to describe the behavior of magnets and fluids, the researchers translated clinical databases of hepatitis C virus sequences into “fitness landscapes” quantifying the replicative capacity of the virus as a function of its amino acid sequence. Charting the peaks and valleys of viral fitness, the fitness landscape reveals how best to attack the virus to force it from the high-fitness peaks down into the low-fitness valleys where it is least able to replicate and harm the host.

“We have computed the fitness landscape for the hepatitis C virus protein responsible for viral replication to identify parts of the virus most susceptible to immune attack,” said Gregory Hart, a graduate researcher in Physics and first author of the paper, “Empirical fitness models for hepatitis C virus immunogen design,” appearing in the journal *Physical Biology*. The research team used its model

to computationally test 16.8 million candidate vaccines to identify 86 optimal formulations targeting viral vulnerabilities highly susceptible to vaccine-induced immune attack by the T-cells (white blood cells) of the host immune system.

“By identifying a small number of promising vaccine candidates within the vast search space of possible designs, our computational approach can guide experimental vaccine development and massively accelerate the search for a hepatitis C vaccine,” Ferguson added. “We anticipate that with increasing computational power and reducing sequencing costs, it will soon become feasible within the coming years to apply our technology to the complete HCV proteome and perform rational in silico design of a complete anti-HCV immunogen.”

- *Engineering Communications*



*Math models of viral fitness.*

*(left) The viral “fitness landscape” is topographical map in which amino acid sequence specifies a location, and the height prescribes the fitness. The landscape reveals vulnerable targets that force the virus from high-fitness peaks into low-fitness valleys.*

*(right) Ferguson describes viral fitness using the Potts spin glass model from statistical physics usually used to describe the behavior of magnets and fluids. Using Bayesian inference techniques, Ferguson translates clinical sequence databases of hepatitis C virus into empirical Potts models describing the replicative fitness of the virus as a function of its amino acid sequence.*





Tony Griffin

## GRIFFIN RECEIVES NDSEG fellowship

Tony Griffin, Ph.D. student in the Nancy Sottos research group, has been awarded a National Defense Science and Engineering Graduate (NDSEG) Fellowship from the U.S. Department of Defense.

Griffin received his B.S. in MatSE from the University of Illinois in 2013. His Ph.D. research focuses on the use of microvascular networks for reconfigurable wireless electronic devices. "We fabricate vascular networks on electronic devices using either structural polymers or composites," Griffin said. "By partially filling these networks with a liquid metal, we can alter the physical electrical structure of the device, thus tuning

the wireless signal properties. The applications range anywhere from more efficient WiFi to military radar detection applications."

After completing his Ph.D., Griffin would like to work in industrial R&D or for a start-up company.

NDSEG Fellowships are designed to increase the number of U.S. citizens and nationals trained in science and engineering disciplines of military importance. The fellowships provide three years of support and offer an annual stipend of approximately \$31,000 and full tuition. About 200 fellowships are awarded each year.

## FALL picnic

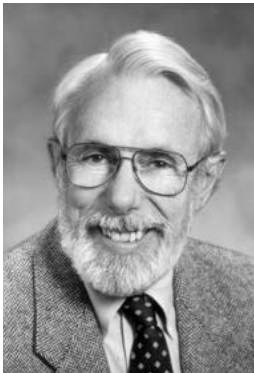
MatSE welcomed 52 new graduate students with a picnic on August 19 at the Illini Groves.







## Donald W. Hamer Fellowships recruit best and brightest to MatSE graduate program



Donald Hamer

The first of his family to earn a college degree, Donald Hamer graduated from the University of Illinois in 1945 with a bachelor's degree in ceramic engineering. His generosity to the Department of Materials Science and Engineering at Illinois has been manifold, with major gifts to renovate the undergraduate laboratories and endow a named professorship, fellowship and scholarship in MatSE. At the first Hamer Professorship investiture ceremony in 2003, Donald Hamer remarked, "There is

great satisfaction in being able to spend some money for a very, very good cause. Someone once said, you know the old saying 'Give till it hurts.' That's all wrong. Give till it feels good."

Since 2001, the Donald W. Hamer Fellowship has helped the department recruit exceptional students into the MatSE graduate program. To the right are the names of the Hamer Fellows for 2015-16 and their undergraduate institutions, along with why they chose MatSE at Illinois for their graduate study.

I chose Illinois because of its extensive array of lab equipment. I knew that I would be able to go into any direction I wanted to within materials science.

- **John Brethauer (University of Minnesota, Duluth)**

I chose Illinois because of the research opportunities as well as I thought that the university combined with the city would be a great place to study, do research, and continue advancing my education.

- **Joseph (JR) Creekmore (University of Tennessee, Knoxville)**

I chose Illinois because I felt comfortable with the materials science department when I visited here and communicated with people from the department.

- **Leon Dean (University of Texas, Austin)**

I came to the MatSE grad school open house and was impressed by the department size and facilities and the enthusiasm of the faculty and students.

- **Chaoyang (Chelsea) Liu (MIT)**

I felt like overall the program at Illinois was a good fit.

- **Blanka Janicek (Barnard College)**

I chose Illinois because I had a great time here during my undergraduate years. Also, the University offers various research routes. This allows me to find many topics that fit my interest.

- **Dennis Jones (University of Illinois, Urbana-Champaign)**

I chose the U of I for its excellence in engineering, and because of its proximity to my family.

- **Aidan Gilchrist (University of Massachusetts, Amherst)**

I chose Illinois because it has a well-established materials science and engineering program doing both fundamental and application-based research.

- **Shannon Murray (Texas A&M)**

I decided to come to the U of I because of the well-respected materials science department, and because the faculty and research are great.

- **Megan Brooks (Texas A&M)**



*Justin Betancourt, center, with his host dad and brother in Toledo, a centuries-old town outside of Madrid.*

## Undergrad calls study abroad **‘the experience of a lifetime’**

“I have been able to do more than I have ever imagined, including studying abroad, thanks to the generosity I have received from this university.”

Justin Betancourt, a MatSE undergraduate from Willowbrook, IL, studied in Spain in the spring semester.

“I wanted to study abroad because I had never really been anywhere that was that much different from what I have been used to my whole life. I also wanted a chance to begin looking at cultures different from my own,” Betancourt said. “I think understanding other cultures is essential to understanding other people’s viewpoints and further expands our own ideas and mindset.”

He stayed with a host family in Madrid. “They were a very welcoming family,” Betancourt said, “and by the end of my time in Spain, I had a heavy heart leaving them behind.” He especially enjoyed their two-hour dinners and funny stories and lessons on Spanish culture.

His biggest challenge during the semester abroad was becoming confident speaking Spanish, even after six years of Spanish classes. “Though my Spanish isn’t perfect, I am able to talk fluidly and confidently in a different language, which was a goal I’ve been set on achieving for a while,” he said.

Betancourt decided to major in MatSE because he wanted a discipline that combines chemistry, physics and biology. So far, he said he has been challenged in all three of those areas. A junior in the biomaterials area of concentration, Betancourt plans to either go to medical school or into R&D in a biomaterials industry.

He is the recipient of the Donald W. Hamer Scholarship in Materials Science and Engineering. “Scholarships have been an immense help for me,” he said. “I am afraid I would not be able to come to U. of I. without such generous help from people who believe in my abilities as an engineering student here.”

He has been very involved with the professional chemistry fraternity Alpha Chi Sigma and is currently the chapter president. Last summer he was invited to share his ideas at the national Alpha Chi Sigma conference at the University of Virginia. He is a facilitator for ENG 100, a semester-long orientation for engineering students. “It has been really fulfilling for me to be able to give advice to these students and to also tell them stories from my personal experiences so they know what and what not to do during their freshman year,” Betancourt said.

Betancourt encourages undergraduates to study abroad if given the opportunity. “If you need to take an extra class over the summer or next semester, it is worth the trouble of doing so just to be able to have that experience of a lifetime,” he said.



# MATSE SCHOLARSHIPS AND AWARDS 2015-2016

## **A.I. Andrews Scholarships:**

Sho Harisawa, Steven Simpkins

## **Paul A. Beck Scholarship:**

Philip Kagebein

## **Harry J. Beckemeyer Jr. Scholarship:**

Arjun Balwally

## **Clifton G. Bergeron Scholarships:**

Colton Adamick, Allyson Brusich

## **Louis R. Berner Scholarship:**

Sean Murray

## **Gerson B. Bilow Scholarships:**

Connor Bailey, Derek Kwok

## **Robert Bohl Scholarships:**

Adam Brown, Brian McDonald, Jack O'Neil,

Dawei Shi, Minkang Yang, Jinpeng Zhuo

## **Otto Sr. and Mildred Capek Scholarship:**

Ryan Thier

## **Earl J. Eckel Scholarships:**

Soham Ali, Pritam Bhattarai, Jacob Camp,

Melissa Goetter, Xuelin Guo, Zachary Hoffman, Michael Hu, Kaixiang Huang,

Naveed Jamali, Anahita Kagti, Hyokang Lee, David Limberg, Jonathan Lin,

Pufan Liu, Yuting Liu, Deepak Mani, Paul Ng, Rui Ning, Anisa Nuanes, Nicholas

Palcheck, Aditya Patel, Arvind Ramaiah, Daniel Rosenthal, Hao Sheng, Zhan

Shi, John Shimanek, Samuel Srajer, Zhen Sun, Alexander Trick, Jiechen Wang,

Chuxuan Wang, Siyi Xu, Ming Xu, Mantian Xue, Yiyuan Yang, Elliot Young,

Qiujiu Zhao

## **M. Laird and Charisann Froberg Scholarship:**

Julia Zuo

## **Phillip H. Geil Scholarship:**

Nicholas Dunlap

## **Henry E. Grein Jr. Scholarship:**

Daniel Grober

## **Donald W. Hamer Scholarships:**

Justin Betancourt, Olivia Rogers

## **Doris Maroney Krumwiede Scholarships:**

Grace Pakeltis, Lauren Smith

## **Joseph and Wyvona Lane Scholarship:**

Jason Fleischman

## **Robert E. and Karen Martin Luetje Scholarship:**

David Christianson

## **Kevin Moore Memorial Scholarship:**

Gabriel Velarde

## **G. Ronald and Margaret H. Morris Scholarship:**

Samuel Schmidt

## **G. Ronald and Margaret H. Morris Opportunity Scholarship:**

Joseph Cohen

## **James A. Nelson Scholarship:**

Brendan Eng

## **Cullen W. Parmelee Scholarships:**

Jacob Dutler, Zachary Haber, Devon Papanicolas, Pierce Randle, Alex Shen



## **Cullen W. Parmelee International Research Scholarships:**

Kacper Lachowski, Emily Lindgren, Cameron Rosenthal

## **Frederick A. Petersen Scholarship:**

Justin Baker

## **Norman L. Peterson Scholarships:**

Andrew Curtis, Deepa Kote, John Smith

## **Larry D. and Carol Rakers Scholarships:**

Janna Eaves, Kenneth Jabon, Alex Kim, Elizabeth Lee, Edward Lee

## **Ian and Victoria Robertson Scholarship:**

Jacky Lu

## **C. M. Wayman Scholarship:**

Samantha Tatar

## **Wert Scholarships:**

Matthew Cheng, Tara Cullerton, Fang Ewe, Guanhua Fang, Shamalee

Goonetilleke, Chenchen Gu, Diane Kuai, Athena Lin, Corinne Lopes, Katharine

Mehan, Grace Nelson, Hannah Taylor, Yuxiao Wu, Boyi Xu, Tianshu Zhai, Siyi

Zhang

## **Alfred W. Allen Awards:** Pritam Bhattarai, Jacob Dutler, Brendan Eng,

Zachary Haber, Jingyuan Huang, Qing Lin, Yiyue Luo, Devon Papanicolas,

Pierce Randle, Tian Sang, Alex Shen, Bonan Shen, John Shimanek, Lauren

Smith, Charles Stovall, Yifan Yao, Elliot Young

## **Arthur L. Friedberg Awards:**

Meher Bharucha, Michael Sarantos

## **Laird Froberg Award:**

Elizabeth Fedonina

## **Materials Science and Engineering Alumni Board Award:**

Kelsey Wu

## **Sheryl Blair Tipton Award:**

Janna Eaves



# THANK YOU for your gift to MatSE!

The student awards highlighted in this issue would not be possible without the support of our alumni and friends. Gifts to the MatSE Department provide scholarships for outstanding and in-need students, allow us to continuously improve the quality of our instructional laboratories, and support special events featured in this issue such as our back-to-school picnic and annual awards banquet. Alumni gifts also support travel by undergraduate researchers to attend professional conferences and enable us to provide beneficial services such as career nights and special seminars.

This 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, 2014, and June 30, 2015. We check the list carefully, but if we have overlooked you, please contact us so that we can correct our records. Individuals listed in **boldface** are first-time donors to MatSE.

Some MatSE alumni choose to support other units of the University of Illinois; those gifts are not listed here but will be acknowledged by those units. Gifts to "Engineering at Illinois" are directed to the College of Engineering, not the MatSE Department. If you wish to direct gifts to MatSE, please indicate MatSE on your check and on the donor form. You can donate online at [www.matse.illinois.edu/support](http://www.matse.illinois.edu/support) or use the form included in this newsletter.

The Engineering Dean's Club recognizes individuals whose annual giving to engineering departments or the engineering fund is \$1,000 or more over the course of a year. Members receive a Dean's Club lapel pin to help them show their pride and commitment to Engineering at Illinois.

The President's Council is the university's highest donor recognition organization. Membership is extended to those who have made outright gifts of \$25,000 or more in their lifetimes, as well as those who have made deferred gifts of \$50,000 or more.

For further information about making a gift to the Department of Materials Science and Engineering, contact Erin Kirby at [ekirby2@illinois.edu](mailto:ekirby2@illinois.edu) or (217) 244-1901. Your gift today is an investment in the future.

## PATRONS - \$1,000 OR MORE

Adelaide Aime and David Cahill  
 Darryl (BS Met '59) and Patricia Albright  
 Gerson Bilow (BS Met '65, MS Met '67) and Michele Shoresman  
 Raymond Capek (BS Cer '58, MS Cer '59, PhD Cer '61)  
 Charles Casey (BS Met '60)  
 Wen-Ching (PhD Met '80) and Chung-Yen Chen  
 Eleanor Darby  
 Thomas Darby (MS Met '69, PhD Met '74)  
 Mary DeBoer  
 Richard Friedberg  
 James (BS Cer '56) and Judith Glasford  
 Steven (BS Cer '81) and Pamela Grant  
 Paul (BS Cer '68) and Elaine Guttman  
 Donald Hamer (BS Cer '45)  
 Khalid (PhD MatSE '09) and Jennifer Hattar  
 Nancy Hershberger  
 Yong Kwan Kim (PhD MatSE '06)  
 Kenneth (BS Cer '68, MS Cer '69) and Kathleen Kuna  
 Lance (MS Met '73, PhD Met '76) and Patricia (MS Met '76) Labun  
 George (BS Met '60, MS Met '62, PhD Met '66) and Petrea Mah  
 Nicholas Mencinger (BS Cer '80)  
 Thomas (BS Met '79) and Patricia (BS Met '79, MS Met '86) Miller  
 G. Ronald (BS Met '59) and Margaret Morris  
 Geoffrey (MS Cer '84) and Mary Lou (BS Cer '84) Morris  
 Brian Murphy (BS MatSE '01)  
 Dallas (BS Met '61) and Ann Pasley  
 Lawrence Rakers (BS Met '85, MS Met '88)  
 John Roberts (BS Met '65)  
 Gregory (BS Cer '85) and Jill Ruschau  
 Anthony Schaffhauser (BS Met '63)  
 Ronald Topp (BS Met '64)  
 David (MS Cer '59, PhD Cer '61) and Claire Wilcox

## BENEFACTORS - \$500 TO \$999

Joseph Au (MS Met '72, PhD Met '76)  
 Maynard Bauleke (MS Cer '51)  
 Clifton Bergeron (BS Cer '50, MS Cer '59, PhD Cer '61)  
 Paul (PhD MatSE '98) and Colleen Braun  
 James (BS Met '73, MS Met '74, PhD Met '78) and Barbara Burk  
 S. Jay Chey (PhD MatSE '96)  
 Robert Eagan (MS Cer '68, PhD Cer '71)  
 Matthew (BS Cer '92, PhD MatSE '96) and Dana Frey  
 Chris Goodbrake (BS Cer '70, MS Cer '75, PhD Cer '78)  
 and Elizabeth Richards (BS Cer '75, MS Cer '77, PhD Cer '81)  
 Charles Hall (BS Cer '59, MS Cer '60, PhD Cer '62)  
 James (BS Cer '70, MS Cer '72, PhD Cer '74) and Mary Humenik  
 Mary Karas  
 Ralph Leonard (BS Met '63, MS Met '64)  
 Carlos (MS Met '77, PhD Met '81) and Lubella Levi

Leiming Li (PhD MatSE '02)  
 Robert Loke (BS Cer '92)  
 Ronald Malatesta  
 Elizabeth Opila (BS Cer '81)  
 Paul Osenar (PhD MatSE '98)  
 Paul Papierski (BS Cer '82)  
 Leonard Radzilowski (PhD MatSE '95)  
 Ranjeet Rao (BS MatSE '01, PhD MatSE '08)  
 Louis and Ingrid Reuter  
 Donald Romani (BS Met '58)  
 Aaron (BS Cer '95) and Jennifer Saak  
 John Schwan III (BS MatSE '97)  
 Brett Wilson (BS Cer '89)

## SPONSORS - \$100 TO \$499

### Farshid Adibi-Rizi (PhD Met '93)

Vasantha Amarakoon (MS Cer '80, PhD Cer '84)  
 Rajnikant Amin (MS Cer '60, PhD Cer '62)  
 Harvey Andersen III (BS Met '78)  
 Robert Clark Anderson (BS Met '51)

### Albert and Jewel Baker

Alfred Bonfiglio (BS Met '60)  
 Donald (BS Met '57, MS Met '59, PhD Met '62) and Elaine Boone  
 Walton Brown III (BS Met '77)  
 Woodrow Carpenter (BS Cer '39)  
 George (BS Cer '86, MS Met '89, PhD Met '92) and Sylvia Carson  
 Kin Chau (BS Met '79, PhD Met '83)  
 Kangguo Cheng (PhD MatSE '01) and Na Dai  
 Albert Chow (BS MatSE '95)  
 Peir-Yung Chu (PhD Cer '92) and Trudy Hu  
 Elliot Clark (MS Met '79, PhD Met '86)  
 William Conley (MS Met '79) and Sandra Monroe  
 Donald and Betty (MS Met '82, PhD Met '85) Coulman  
 Wilford Coutts (BS Met '54)  
 Mark (BS Cer '80, MS Cer '82)  
 and Eileen (BS Cer '81, MS Cer '82) De Guire

Dale Dewald (PhD Met '91)

### Anthony DiGiovanni (BS Cer '93)

Carl Dohrman (BS MatSE '02)  
 Christopher Ervin (BS Met '95)  
 Robert (BS Cer '53) and Carrol Foxall  
 Mark and Lorraine (MS Cer '87, PhD Cer '91) Francis  
 Frank (BS Cer '73) and Christina Gac  
 Zhenbin Ge (PhD MatSE '06) and Ruli Fan  
 Bhaskar Ghate (MS Cer '62)  
 Ronald Gibala (MS Met '62, PhD Met '65)  
 Kurt Greissing (BS MatSE '95)  
 Daniel Griesenauer (BS Cer '87)  
 Salvatore Grisaffe (BS Met '57)  
 David (BS Cer '60) and Shirley Hanson  
 Michael (MS Cer '71, PhD Cer '74) and Frances Haselkorn

*"It is gratifying to know that alumni are still so connected to the department and continue to support students. I am still somewhat uncertain what I will do after graduation, but I want to work with semiconductors."*

**Brendan Eng**  
 Junior from Westmont, IL  
**James A. Nelson Scholar**



Stacey Henning (BS Cer '89)  
 James Hobart (BS Met '58)  
 Bryan Hockman (BS Met '82)  
 Lowell (BS Met '63) and Ruth Hoffman  
 Amanda Homce (BS MatSE '10)  
 William (BS Met '50, MS Met '51) and Phyllis Hoskins  
 Gerald Johnson (BS Met '62)  
 Joseph Kao (BS MatSE '09)  
 Robert Kay (BS Met '55)  
 James Keiser  
 Betty Kepley  
 Randal Knipe  
 Martin Kopchak (BS Met '73, MS Met '76) and Eileen Roche-Kopchak  
 Kent Koshkarian (BS Cer '86, MS Cer '88)  
 James (BS Cer '60, MS Cer '67, PhD Cer '69) and Ellen Laird  
 Michael (BS Cer '82) and Danielle Lanagan  
 Charles Leedecke (MS Cer '74, PhD Cer '77)  
 Arnold Litman (BS Met '46)  
 Ruichen Liu (PhD Met '77) and Hui-Hsing Fu  
 Jeffrey (BS Met '82, MS Met '87) and Laurel Logas  
 William Long (MS Cer '67)  
 K. Delmar Madsen (BS Cer '89)  
 Eric Mast (MS Cer '91)  
 Joseph (BS Cer '58) and Margaret Meindl  
 Keith Meyer (BS Met '80)  
 Roger Miller (BS Cer '67)  
 Terry Myers (BS Met '78)  
 Mark Ohls (BS Met '82, MS Met '85, PhD Met '90)  
 Manavasi (MS Met '57, PhD Met '60) and Lakshmi Parthasarathi

### C. Philip Ross Jr. (BS Cer '65)

### Donna Peota

Michael (BS Met '90) and Elizabeth Pershing  
 Kristin Petersen  
 Kevin Piletic (BS Met '84)  
 Anthony (MS Met '71, PhD Met '77) and Jacqueline Polak  
 Grant (BS Cer '96) and Rebecca Pomeroy  
 Carolyn (BS Cer '74) and Gino Primus  
 Jeremy Repede (BS MatSE '01)  
 Robert Rita (BS Cer '70, MS Cer '72, PhD Cer '76)



*"My scholarship helps offset the cost of a quality education, and I am grateful for the gift. In the future, I hope to continue working at Rolls-Royce, where I am currently a co-op, to apply everything that I have learned throughout my education."*

**Samantha Tatar**  
Junior from Rockford, IL  
**C.M. Wayman Scholar**

## CONTRIBUTORS – UP TO \$99

Bob Bieniasz (BS Cer '69)  
Rodney Bond (BS Met '67)  
John (BS Cer '88, MS Cer '90) and Joann Bonini  
Edward Brown (BS Met '83)  
Thomas Carlson (BS Cer '67, MS Cer '72)  
Kent Coughlin  
Robert Degenkolb (BS Cer '49, MS Cer '50)  
John DeLuca (BS Cer '66, MS Cer '67, PhD Cer '69)  
Joseph Dow (BS Met '62)  
Robert (BS Met '54) and Eleanor Dreshfield  
Fred (BS Met '64) and Margaret Fabricant  
William (BS Cer '87, MS Cer '89) and Jill Fahrenholtz  
Susan (BS Met '84) and Jonathan Freeman  
Craig (BS MatSE '00) and Lindsay Gowin  
James Hanafee (BS Met '58, MS Met '60)  
John (MS Met '92) and Marsha Haworth  
Nathan Hood (BS MatSE '96)  
Wendy Howell (BS Cer '91)  
Scott Hughes (BS Met '74, MS Met '75)  
Steven Jenkel (BS Met '82)  
Edward Kaminski Jr. (BS Met '50)  
Donald Kraft (BS Cer '52)  
Kevin Leedy (MS Met '93, PhD Met '97)  
**Stephen Little (BS MatSE '01)**  
Neil Manning (MS Met '88, PhD Met '92)  
Todd (BS MatSE '03, MS MatSE '05) and Deborah Martin  
Marvin Mehler (BS Met '77, MS Met '85)  
Vito Mitkus (BS Met '52)  
James Peters (PhD Met '71)  
Bryan Pratt (BS MatSE '98)  
Robert (BS Cer '63) and Jennifer Radtke  
Harold (BS Met '53, MS Mining '56) and Irene Rolseth  
Richard (PhD Met '65) and Pam Siegel  
F. Xavier (MS Met '63) and Patricia Spiegel  
Peter (PhD Met '78) and Janet Tortorelli  
Charles (BS Cer '43) and Alda Turner  
Lakeisha Walker (BS MatSE '01)  
Edward and Maureen Wells  
Michelle White (BS Cer '86)  
Jack Wilkerson  
Joseph Yadron (BS Met '61)  
Donald Zebrauskas (BS Met '76)  
Peter Ziolkowski (BS Met '83)  
Melvin Zuckerman (BS Met '49)  
American Chemical Society  
Amin Family Trust

Ronald Scanlan (BS Met '66)  
Lawrence Schulz (bs Cer '76, MS Cer '77) and  
Lonna Streight-Schulz (BS Cer '79)  
F. Robert Setlak (BS Met '64)  
Alvin Shulman (BS Met '52)  
Richard Skolly (BS Met '78)  
Nola Smith  
James (BS Met '52, MS Met '54, PhD Met '59) and Erlena Stanley  
Gary Steckel (MS Met '74, PhD Met '78)  
Stuart (PhD Met '83) and Christine Stock  
Daniel (BS Met '61) and Orleen Stoltz  
Robert Stusrud (BS Met '59)  
William (BS Met '79) and Eileen Taylor  
William (BS Cer '81, MS Cer '82, PhD Cer '86)  
and Marie Tredway (BS Cer '86)

### **Ryan Trumbo (BS MatSE '11)**

Joseph Van Nostrand (PhD MatSE '96)  
David (BS Cer '90, MS Cer '92) and Kimberly Verneti  
Robert Verneti (BS Cer '63, MS Cer '64)

### **David Wente (BS MatSE '13)**

David West (PhD MatSE '02)  
Christina White (BS Cer '91)  
Theodore (BS Met '73, MS Met '75) and Sharon Wilken  
Steven Willis (BS Cer '87, MS Cer '90)  
Kent Yancik (BS Met '84)  
Pin Yang (PhD Cer '92)  
Philip Yashar (BS Met '93)  
Philip (PhD Met '79) and Marlene Zapp  
Jacob Zindel (BS Met '80, PhD Met '86)



## COMPANY AND FOUNDATION SUPPORT

If you work for a company that offers a matching gift program, please be sure to include a matching gift form with your donation. For more information on matching gifts, contact the University of Illinois Foundation at (217) 333-0675.

Apple  
ArcelorMittal  
Baker Hughes Foundation  
Benevity Community Impact Fund  
The Boeing Company  
Cardinal Health Foundation Inc.  
Colgate-Palmolive Company  
Cotter Consulting, Inc.  
The Dow Chemical Company  
ExxonMobil Foundation  
Fidelity Charitable Gift Fund  
Frontstream/Cardina Health Foundation  
Global Services Associates, Inc.  
IBM Matching Grants Program  
Intel Foundation

John Roberts Agency  
L'Oreal USA, Inc.  
Lockheed Martin Foundation  
MC10, Inc.  
The Medtronic Foundation  
The Morris Family Charitable Foundation  
Network for Good  
The Noris Foundation  
Prudential Foundation Inc.  
Spectrum Assembly, Inc.  
Toray Industries, Inc.  
Trestler Metallurgical Corporation  
Tyco International Inc.  
United Technologies Corporation  
United Way of Central New Mexico  
United Way of Champaign County  
YourCause, LLC Trustee for PricewaterhouseCoopers LLP  
3M  
3M Foundation

## Department of Materials Science & Engineering Fund

Yes, I want to support MatSE with my gift of.  \$1,000  \$500  \$250  \$100  Other: \_\_\_\_\_

This gift is also from \_\_\_\_\_ Relationship: \_\_\_\_\_

- |  |  |
|--|--|
| <input type="checkbox"/> MatSE Fund [7-77904]                                  | <input type="checkbox"/> Bob Bohl Scholarship Fund [7-71507]   |
| <input type="checkbox"/> Charlie Wert Scholarship Fund [7-73848]               | <input type="checkbox"/> Ceramic Engineering [7-75740]         |
| <input type="checkbox"/> Earl Eckel Scholarship Fund [7-72479]                 | <input type="checkbox"/> Jim Nelson Scholarship Fund [7-72833] |
| <input type="checkbox"/> Clifton Bergeron Scholarship Fund [7-72728]           | <input type="checkbox"/> Phil Geil Scholarship Fund [7-75866]  |
| <input type="checkbox"/> Howard Birnbaum Lecture Series Fund [7-70282]         | <input type="checkbox"/> Marvin Wayman Memorial Fund [7-73939] |
| <input type="checkbox"/> MatSE Visionary Scholarship Fund [7-74147]            |  |
| <input type="checkbox"/> Ian and Victoria Robertson Scholarship Fund [7-70435] | <input type="checkbox"/> Other: _____                          |

My check, payable to UIF/MatSE, is enclosed

I wish to make my gift of \$\_\_\_\_\_ by credit card.  Visa  MasterCard  American Express  Discover

Card no.: \_\_\_\_\_ Expiration date: \_\_\_\_\_ 3 or 4 digit CVV: \_\_\_\_\_

Signature: \_\_\_\_\_ Print name as it appears on card \_\_\_\_\_

My gift will be matched Company name \_\_\_\_\_

Name(s) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Email \_\_\_\_\_

Credit card billing address if different than above: \_\_\_\_\_

You will receive a gift receipt issued by the University of Illinois Foundation.

Your gift is tax deductible as allowed by law. **THANK YOU.**

Return this form  
and your check to:  
University of Illinois Foundation  
P.O. Box 3429  
Champaign, IL 61826-3429

Make your gift online:

[www.matse.illinois.edu/support](http://www.matse.illinois.edu/support)

5N DCP / 777904

# Alumni Awards

## DISTINGUISHED MERIT AWARD



Atef Eltoukhy

### **ATEF ELTOUKHY** (PhD Met '78)

Atef Eltoukhy is the chairman of Aurum Capital Management. Formerly, he was a professor at the University of Southern California in Los Angeles, a scientist at IBM, and an entrepreneur in Silicon Valley, where he co-founded two companies in the digital storage industry and took them public. He played a key role in the data storage industry's move from particulate to thin film magnetic recording media. In the early 1990s, he launched a new career in investment management, wherein he co-founded two registered entities in San Francisco: a broker-dealer and an investment adviser. He is active in educational philanthropy through his Eltoukhy Family Foundation. He has served on the Board of Directors for non-profit organizations which foster cross-cultural experiences, education, and entrepreneurship.

## DISTINGUISHED MERIT AWARD



Carolyn Primus

### **CAROLYN PRIMUS** (BS Cer '74)

Carolyn Primus is the founder and president of Avalon Biomed Inc., which is devoted to the development of bioactive ceramics for dental and medical applications. Her company was an outgrowth of her National Institutes of Health Small Business Innovative Research Phase I and II awards for Quick-Set dental material. She received her Ph.D. in materials science and engineering from the University of California, Davis, in 1980. She has worked in applied research related to government projects on nuclear weapons and naval research, consumer products at Gillette, and dental materials for Dentsply. She is on the part-time faculty at two dental schools. She is a member of the MatSE Senior Advisory Committee. In 2013, Carolyn and her husband, Gino, established a scholarship in the College of Engineering for underprivileged undergraduate women.

## YOUNG ALUMNUS AWARD



Greg Gratson

### **GREG GRATSON**

(PhD MatSE '05)

Greg Gratson is a vice president at GE Capital. His role is to build partnerships between the GE Global Research Center (GRC) and the network of middle-market, private equity-owned companies in GE Capital's network. Prior to joining GE Capital, Greg worked for GE Global Research, first as a materials scientist developing transparent ceramics and photonic devices, and then as a program manager in charge of the relationship between GE and DARPA.

## LOYALTY AWARD



Jack Krumwiede

### **JOHN (JACK) KRUMWIEDE**

(BS Cer '60, MBA '62)

Jack Krumwiede worked at PPG for 36 years, working in manufacturing for about 16 years and in research for 20 years. He worked in the glass division, primarily in automotive and construction. He retired from PPG in 1998. Jack and his wife, Doris (MS Cer '60), had been longtime supporters of the MatSE Department, and upon his wife's death, Jack established the Doris Maroney Krumwiede Scholarship to support female undergraduates in Materials Science and Engineering.

## Join the discussion **ON LINKEDIN**

At the fall MatSE Alumni Board meeting, student society leaders expressed an interest in connecting with alumni to get advice on resumes, grad school and industry. Several board members thought the most straightforward way for this connection to be made would be for students to get LinkedIn accounts and use the MatSE at Illinois group as a resource. **Alumni are invited to join in the discussion on the MatSE at Illinois LinkedIn group and support current students.**



# Class Notes

**Sanak Mishra (MS Met '70, PhD Met '73)** is the president of the University of Illinois alumni chapter in Delhi, India. After his retirement from ArcelorMittal, he accepted a full-time position with the Indian Steel Association as its secretary general and executive head. In his position, he interfaces with the government of India on a regular basis on policy matters that impact the steel industry.



Steven Kilgore

**Steve Kilgore (BS Met '93, MS MatSE '96)** visited campus in May after being in Chicago to present a technical research paper at the Electrochemical Society Conference. After graduating from Illinois, he was recruited into the prestigious Engineering Rotation Program with Motorola's Semiconductor Product Sector in Phoenix, AZ. He has had several advancing engineering roles in materials characterization, semiconductor processing, manufacturing

quality and reliability along with earning his Six Sigma Black Belt certification. Kilgore received his Ph.D. in MatSE from Arizona State University (2013) while employed at Freescale Semiconductor (formerly Motorola) with his dissertation research focused on reliability of gold thin films for GaAs devices. He is currently a senior principal reliability and quality manager overseeing technology development in high-powered RF, analog and MEMS devices. He is actively involved on committees for the Materials Research Society and Electrochemical Society. Steve and his wife Lisa, who also works for Freescale Semiconductor, reside in Chandler, AZ.



Alumnus Gaurav Agrawal (PhD MatSE '94), center, with daughters Shreya and Amulya, wife Anjana Jadav and mother Manjul during their visit to campus in August.

**Gaurav Agrawal (PhD MatSE '94)** and his family visited the University of Illinois campus in August. He spoke to graduate students about his career in the oil and gas industry. He is vice president, Technology, based at the Baker Hughes' Dhahran Global Technology Center in Saudi Arabia. He is part of the Baker Hughes Technology Leadership Team that guides the strategic technology direction and frames the

global technology investments and portfolio decisions. Prior to moving to Saudi Arabia, he was the director of Enterprise Research at Baker Hughes Houston.

**George Matamis (BS MatSE '97)** is senior technical director – Emerging Technologies for Lam Research in Fremont, CA.

**Beth Keser (PhD MatSE '98)**, a principal engineer at Qualcomm, was among five winners selected by a coalition that is trying to get a female version of "MacGyver" on TV in hopes of boosting the number of women who pursue science and engineering careers.

**Minh-Chau Nguyen (MS MatSE '01)** gave birth to a son, Noah Jaiel Nguyen, on June 2. She is senior project manager at Credit Agricole Assurances in Paris, France.

**Varkey Purathur (BS MatSE '08)** is technical sales engineer for Toho Technology Inc.

**Lucas Osterbur (MS MatSE '13)** was selected by the Knowles Science Teaching Foundation as a 2015 Teaching Fellow. Fellowships were awarded to 34 promising high school mathematics and science teachers who are just beginning their careers.



## Birnbaum Lecture

*Christopher Schuh (BS MatSE '97) gave the talk, "The future of nanocrystalline metals in theory and practice" for the 2015 Birnbaum Memorial Lecture on September 14. Schuh is Head of the Department of Materials Science and Engineering and the Salapatas Professor of Metallurgy at MIT.*



## MatSE alumnus celebrates milestone birthday

Woodrow (Woody) Carpenter (BS Cer '39) celebrated his 100th birthday with a celebration at the W.W. Carpenter Foundation Museum on September 12. A pioneer in the enamel industry, Carpenter founded two companies, a publication, a society and a museum all dedicated to enamel.

At the University of Illinois, he researched enamel under Prof. Andrews. Following graduation, he took a job as a research engineer at the Ingram Richardson Manufacturing Company. After serving four and a half years in World War II, he returned to Ingram Richardson and moved to Cincinnati. In 1947, he attended a lecture by Kenneth Bates, an artist who was to profoundly affect his life and career. His fascination with art enameling led to his forming a business to manufacture a wide variety of colored enamel frits for the art enamellers. The business grew and the number of artists working in the medium also grew. Around 1954, he and a partner started a business to manufacture porcelain

enameled (glass-lined) vessels for the chemical processing industry. Their company, the Ceramic Coating Company, located in Newport, KY, specialized in fabricating large steel vessels and coating them internally with chemically resistant porcelain enamel.

The need for the dissemination of scientific information and reliable technical information among the art enamel community prompted him to start a periodical, "Glass on Metal" in 1982. The magazine was well received, and by 1986, the Enamelist Society was chartered. The publication was turned over to the new society to serve as their newsletter. In the 1980s, Woodrow and his wife Irmgard, a recognized enamel artist, purchased a building in Cold Spring, KY, and converted it into a museum dedicated to the art and history of porcelain enamel. The W.W. Carpenter Enamel Foundation Museum houses over 600 pieces of enamel art, from the third century through the present day. The museum is open for tours, free of charge, by appointment only. The



Woodrow Carpenter with his daughter, Gay Caldwell

W. W. Carpenter Foundation holds enamel on metal and glass enamel fusing workshops. In 2002, Woodrow Carpenter received the Distinguished Merit Award from the MatSE Department for his contributions to the enamel industry.

## Could MatSE alumna's character MiMi be the next MacGyver?



Beth Keser

Beth Keser (PhD MatSE '98), a principal engineer at Qualcomm in San Diego, might be Hollywood-bound if a network picks up the pilot she is creating as part of the Next MacGyver Competition. The National Academy of Engineering, University of Southern California, Google and Ford put on the competition to get a female version of "MacGyver" on TV in hopes of boosting the number of women who pursue science and engineering careers. Keser's entry was selected as one of the 12 finalists out of 2,000 entries. Finalists came from around the globe and included practitioners and scholars in STEM (science, technology, engineering and mathematics) fields, seasoned and first-time writers, students and an internet personality. Show concepts included science fiction thriller, comedy, classic spy, historical and interactive crime drama.

On July 28, finalists pitched a five-minute idea to Hollywood, and Keser was selected as

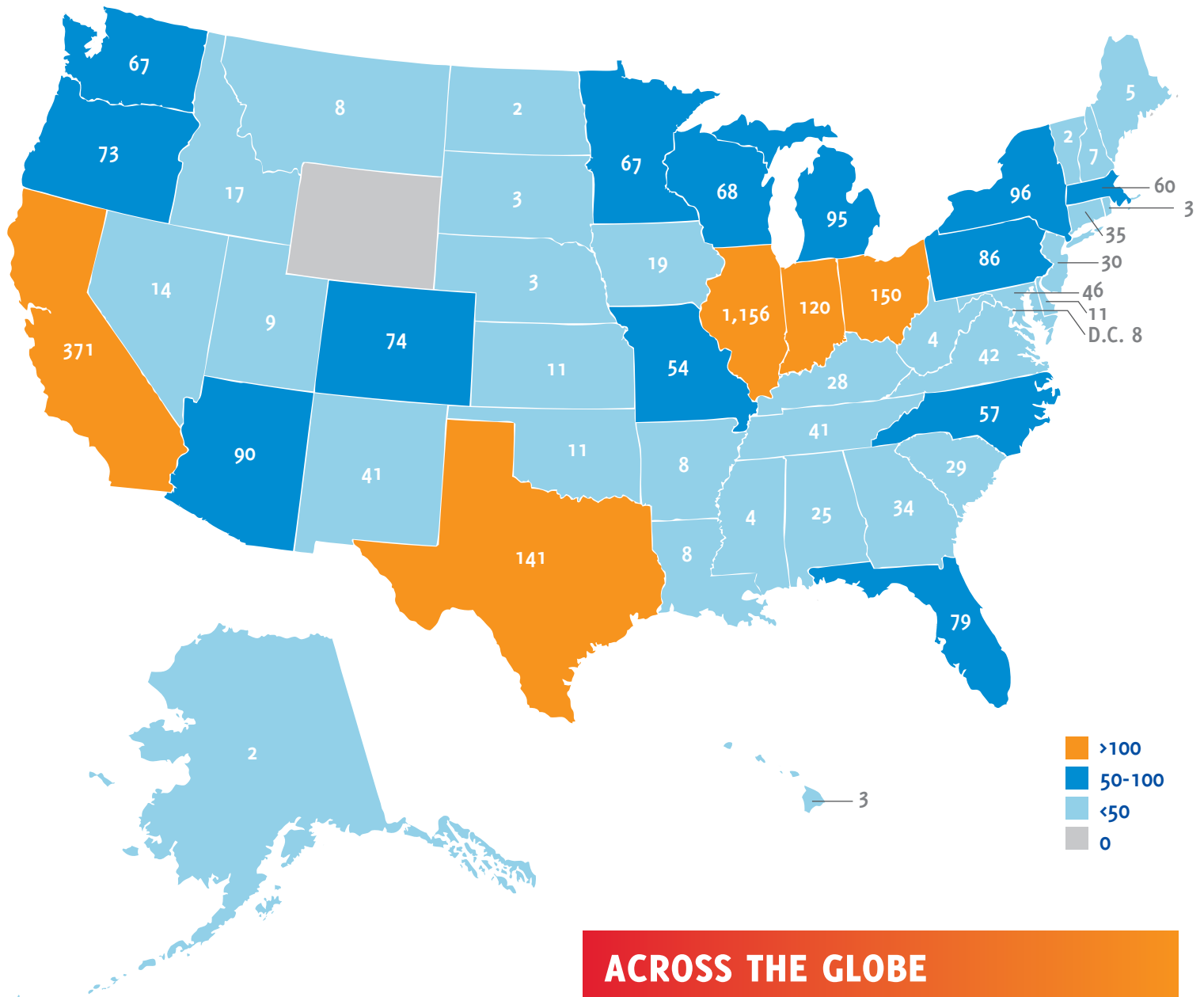
one of the five winners. She is now working with a mentor – Morgan Freeman's production company, Revelations Entertainment – to write a pilot script. "They produce 'Madam Secretary' with Tea Leoni," Keser said. She will pitch the show concept to studios in the coming months.

"My lead character MiMi is an expert witness who travels across the country to testify in 'torn from the headlines' cases, but in each case she finds a mystery that requires science and engineering to uncover the truth," Keser explained. "She uses her network of female engineering friends from college to help her solve these mysteries. It is an action/adventure like 'Alias' and not a courtroom drama."

Keser hopes someday her two young, computer-programming, Lego-playing daughters will join a workforce in which 50% of engineers are women.

# Where are our 3,930 Alumni?

Source: University of Illinois Alumni Association



## ACROSS THE GLOBE

UNITED STATES .....	3,418	FRANCE .....	5
REPUBLIC OF KOREA.....	32	MEXICO .....	5
CHINA .....	28	MALAYSIA .....	4
TAIWAN .....	18	TURKEY .....	4
INDIA .....	16	COLOMBIA .....	3
JAPAN .....	10	GERMANY .....	3
SINGAPORE .....	10		
CANADA .....	7		



**Department of Materials Science and Engineering**

University of Illinois at Urbana-Champaign

1304 West Green Street

Urbana, IL 61801

Non-Profit Organization

U.S. Postage Paid

Champaign, IL 61820

Permit No. 75



# Pigs!

Each year, MatSE undergraduates make ceramic pigs and present them to favorite faculty and staff at the annual awards banquet. The pigs, customized to match the recipient, are a beloved department tradition that dates back to the 1930s.

This year, pigs were presented to Prof. Dallas Trickle, Prof. Andy Ferguson, Cindy Brya and Kimberly Anderson. Prof. Ferguson was unable to attend the awards banquet so was presented with this professor pig in class. His reaction: "Too bad I didn't wear my kilt today!"



**CONNECT** with MatSE!

