CORNELL DOTS RESEARCH COLLABORATION LEADS TO $10M CANCER CENTER PAGE 6

Cover Image: A rendering of the molecular structure of a Cornell dot, which is smaller than 10 nanometers.
am thrilled to serve as director of this distinguished and dynamic department and look forward to the many exciting things to come.

Speaking for the entire department, we thank former director Darrell Schuur for his dedicated service over the past three years, all the more impressive in that during this time he not merely maintained, but dramatically expanded, his world-class research effort on engineered functional oxide materials.

As we celebrate the department’s 50th birthday, I am pleased to tell you that MSE continues to be a leading materials program. This year we welcomed three outstanding new faculty members. Nicole Benedek comes to us from UT Austin with unique expertise in computational approaches to “materials by design.” Huili Grace Xing and Debdeep Jena come to us as tenured professors from Notre Dame with a unique portfolio of innovative pedagogical approaches.

This edition of the MSE Newsletter is dedicated to describing some of the activities that are helping MSE maintain its position as a leading materials program with a unique portfolio of innovative research along with dedication to undergraduate, graduate, and professional education. Notable aspects of our department strategy include:

1. Ongoing focus on research strengths in materials by design, materials chemistry, energy-related materials, and bio-related materials.
2. Active effort at continuous improvement of undergraduate education through assessment feedback, as well as introduction of innovative pedagogical approaches.
3. Expansion of the research-oriented terminal M.S. program, which this year enrolled 20 first-year students.
4. Introduction of the 5th year M.S. degree for MSE undergraduates who successfully conduct a senior thesis research project, followed by an additional year taking courses but with an intense focus on raising their senior thesis research to the level of a full master’s thesis. Three talented students have joined the inaugural class.
5. Expansion of the M.Eng. professional degree program, being championed by Shef Baker in collaboration with Julie Nuccit. New components include stronger interaction with industry leading to corporate-sponsored projects, the flexibility to focus on coursework and satisfy the project requirement with a capstone design project, explicit instruction on soft skills, including interviewing and resume writing, and an overall emphasis on providing a world-class educational experience that serves the interests of students and helps promote faculty interactions with industry.

Among the most noteworthy activities are the multiple awards and achievements of our faculty over the last year. We would like to congratulate them on these accomplishments and invite you to read more about them on Page 10.

• Chris Ober was awarded the very prestigious Photopolymer Science and Technology Outstanding Achievement Award 2015, for his outstanding achievements in photopolymer science and technology. The award cites him for “Development of new advanced photore sist for microelectronics”.

• Uli Wiesner was awarded the MSKCC-Cornell Center for Translation of Cancer Nanomedicines, funded with an $8.2 million grant from the National Cancer Institute’s Alliance for Nanotechnology in Cancer and more than $1.9 million from Memorial Sloan-Kettering Cancer Center. The center—which will have one facility in Duffield Hall on the Ithaca campus and another at MSKCC in New York City—will focus on preclinical studies of the use of C-dots in the treatment of melanoma (skin cancer) and malignant brain cancer.

• Richard Robinson was granted tenure and promoted to Associate Professor.

• Emmanuel Giannella was appointed by the Dean to Associate Dean for Research and Graduate Studies.

• Lara Estoff was appointed as the Director of Graduate Studies.

• Shef Baker was appointed as the Director of the M.Eng. program.

• Julie Nuccit was hired as the Associate Director of the M.Eng. program, and will work with Professor Baker.

• Uli Wiesner, Richard Robinson, and Kit Umbach were individually awarded the College of Engineering Excellence Award recognizing their contributions and leadership in research and advising.

I’d like to extend a personal note of thanks to our former staff member Karen Jordan, as well as Kristie Blake and June Losurdo in COE Alumni Affairs and Development for organizing our 50th anniversary celebration. In addition to presentations from noted alumni, a poster session was held with Natalie Dawles taking home the top prize of $500. Planning is underway for a 50th Anniversary Reception to be held in conjunction with the Fall MRS Meeting in Boston on Tuesday, December 1 at 6:30 p.m., in the Sheraton Boston Independence East Ballroom. Please join us!

As we close in on the end of the fall semester and 2015, I wish you and your loved ones a happy and prosperous new year, and invite you to return and visit the department to see for yourself what spectacular achievements result when you combine splendid facilities, dedicated staff, talented students, and distinguished faculty.

Sincerely,

R. Bruce van Dover
MSE Department Chair
Dr. Nicole Benedek received her B.S. in Chemistry (with First Class Honors) and Ph.D. in Chemistry and Applied Physics, both from RMIT University in Melbourne, Australia. Her doctoral work focused on first-principles theoretical studies of bonding and intermolecular interactions in a class of mixed organic-inorganic molecular crystals. As a postdoctoral fellow at Imperial College London, she studied the structures of grain boundaries in complex oxides and developed a computational technique for predicting the atomic-scale structures of grain boundaries in complex crystals. As a postdoctoral fellow at Imperial College London, she studied the structures of grain boundaries in complex oxides and developed a computational technique for predicting the atomic-scale structures of grain boundaries in complex crystals. 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Dr. Benedek was awarded a Ralph E. Powe Junior Faculty Enhancement Award (Oak Ridge Associated Universities) to support her research on ionic transport in layered perovskites. She is also a recipient of a 2013 CAREER award from the National Science Foundation.
To kick off the MSE 50th anniversary celebration, Greg Galvin (M.S. ’82, Ph.D. ’84, M.B.A. ’93) hosted a dinner for faculty and staff at his home in Lansing, N.Y., on June 4. The celebration continued on June 5 with presentations, talks and a poster session on campus.
CORNELL DOTS RESEARCH COLLABORATION LEADS TO $10M CANCER CENTER

Cornell University, in partnership with Memorial Sloan Kettering Cancer Center (MSKCC), is opening a new $10 million Center of Cancer Nanotechnology Excellence that brings together scientists, engineers, biologists, and physicians to develop and translate new cancer care applications based on nanotechnology.

The MSKCC-Cornell Center for Translation of Cancer Nanomedicines is funded with an $8.2 million grant from the National Cancer Institute’s Alliance for Nanotechnology in Cancer and more than $1.9 million from MSKCC. The center—funded with an $8.2 million grant from the National Cancer Institute’s Alliance for Nanotechnology in Cancer and more than $1.9 million from MSKCC. The center—which will have one facility in Duffield Hall on the Ithaca campus and another at MSKCC in New York City—will focus on melanoma (skin) and malignant brain cancers.

The MSKCC-Cornell Center is based on development and translation of Cornell dots, or C dots—silica-organic hybrid nanoparticles smaller than 10 nanometers in size designed to either adhere to and light up cancer cells or quickly leave the body. C dots are being tested in light up cancer cells or quickly leave in size designed to either adhere to and nanoparticles smaller than 10 nanometers dots, or C dots—silica-organic hybrid nanoparticles can be used to find tumors, but can they also be used to treat them? Wiesner says they will investigate ways to use radioisotopes that act as strong emitters and can destroy cancer cells.

Wiesner and Bradbury were first brought together to work on nanoparticles through a small grant from Weill Cornell’s Clinical and Translational Science Center. Over a decade later, a concept has evolved into a science that warrants its own research center.

“Building this from conception to human clinical trials is not easy,” Wiesner said. “The medical community doesn’t have enough know-how of nanomaterials, and we, the scientists and engineers, don’t have enough experience in the medical area. But to keep a team together for over 10 years to successfully translate an idea into a small grant from Weill Cornell’s Clinical and Translational Science Center is a stamp of approval by the research and medical communities that the early risk we took by focusing solely on sub-10 nanometer particles for clinical translation in the field of cancer nanomedicine was the right decision. It is very rewarding to see how after more than 10 years of work on C dots this is now all coming to fruition,” Wiesner said.

The MSKCC-Cornell Center for Translation of Cancer Nanomedicines will focus on four main areas:

• Foundational science. Researchers will examine the core science behind C dots and other sub-10 nanometer silica particles, including studying their physical properties and how alterations in particle structure change their biological and toxicological response, as well as their effects on immune response.

• Multiplexed optical diagnostic applications in the surgical setting. Researchers hope to create different colored particles that possess distinct optical properties to simultaneously identify during surgery particular tumors and adjacent vital tissues, such as nerves, that may be difficult to visualize.

• Particle radiotherapeutics. Researchers have demonstrated how nanoparticles can be used to find tumors, but can they also be used to treat them? Wiesner says they will investigate ways to use radioisotopes that act as strong emitters and can destroy cancer cells.

A report on the first human clinical trial of C Dots was featured on the Oct. 29, 2014 cover of the journal Science Translational Medicine.

• Assessment of particles in brain tumors for cancer therapy. C dots successfully have detected melanoma metastases during human clinical trials, with clinical trials on brain tumors now ongoing. Wiesner says while early results are promising, biologically driven processes need to be better understood, such as the fate of nanoparticles in tissues and whether they are internalized by tumor cells.

While the MSKCC-Cornell Center for Translation of Cancer Nanomedicines will focus solely on pre-clinical research, it is partnering with two companies, one of which will focus on clinical applications. The yet-to-be-named startup will seek funding to help translate the center’s research into more human clinical trials.

A kickoff meeting was scheduled in November, and Wiesner hopes to have the MSKCC-Cornell Center up and running by the end of the year.

Professor Wiesner speaks at the 2015 Symposium at the Meinig School of Biomedical Engineering Celebration.

A rendering of the molecular structure of a Cornell dot, which is smaller than 10 nanometers.
Eve Donnelly, Assistant Professor and the Dale R. Corson Sesquicentennial Faculty Fellow

ne in three women and one in five men over the age of 50 will fall victim to a phenomenon that is still poorly understood by science—a bone fracture due to osteoporosis. That’s according to the International Osteoporosis Foundation (IOF), which finds that 8.9 million fractures occur annually due to the disease.

And as Baby Boomers continue to reach the most susceptible age for fragility fractures, there are concerns over not only the health of the population, but also over the financial burden of healthcare. The U.S. medical cost of osteoporosis and fractures in 2008 was estimated at $22 billion, according to a study published by Osteoporosis International.

Despite the disease’s impact, scientists and engineers are only beginning to understand the multitude of factors that contribute to bone fractures. Recent jumps in fracture incidents among certain demographics have been a mystery and highlight that gaps in knowledge.

Eve Donnelly, assistant professor and the Dale R. Corson Sesquicentennial Faculty Fellow in the Department of Materials Science and Engineering, is changing that. As an engineering student, Donnelly was interested in fracture mechanics and failure analysis. She was studying the fatigue of different types of metals when she decided to take an elective in skeletal evolution.

Take an elective in Skeletal Evolution

“IT was cool to think about bone, which unlike traditional engineering materials can repair itself,” said Donnelly. “It’s such a unique material because it will adapt to its loading environment.”

Like with most metals, density is an important factor in predicting failure in behavior for people with osteoporosis. “We know osteoporosis changes the chemical composition of the bone, but we’re not really sure exactly how changes in the mineralization or changes in the collagen crosslinking affect the fracture behavior,” said Donnelly. “We’re interested in atypical femoral fractures where we’ve noticed how the bone composition in these pathologic fractures is very uniform. We hypothesize a very wide distribution of material properties is important for healthy bone, and that maintaining a wide distribution of mineral properties and collagen properties is an important intrinsic toughening mechanism,” Donnelly added.

The research is important because physicians and pharmaceutical companies will be able to use the results to better guide their treatments and recommendations. For instance, bisphosphonates are a class of drugs that have proven effective in preventing bone loss. So much so that they have become the most commonly prescribed medication for osteoporosis. However, recent reports have shown that while atypical fractures are rare in patients who take the drugs, the number of atypical fractures they might cause.

Until more conclusive evidence and foundational knowledge about the properties of bone mineral and its relationship to fractures is available, medical professionals and the aging population they treat have no quantitative basis for figuring out the optimal duration of bisphosphonate treatment.

“We hope to give them a mechanistic basis for determining this so that they can use our predictions to inform their treatment recommendations,” said Donnelly.

Bisphosphonates are considered to be generally safe and effective, so Donnelly and her research team are hoping to identify that subset of patients and the factors that lead to increased risk of atypical femoral fractures. This would alleviate some of the fear surrounding the medication, which has seen decreased use in response to the reports on atypical fractures. Donnelly describes the fear as “unfortunate” considering bisphosphonates prevent many more typical hip fractures than the smaller number of atypical fractures they might cause.

Experience studying skeletal tissue. “It was cool to think about bone, which unlike traditional engineering materials can repair itself,” said Donnelly. “It’s such a unique material because it will adapt to its loading environment.”

be the material properties,” said Donnelly, who adds that one of her lab’s primary focuses is how chemical changes induced by diseases or drug treatments affect fracture resistance.

For instance, people with type 2 diabetes are more at risk for bone fractures. Only in the last decade have epidemiologists realized the link, and even today, the relationship is puzzling and somewhat of a paradox. This is because people with type 2 diabetes, on average, have higher bone density and, in theory, should have stronger bones. Yet even after controlling for factors such as weight, balance and lifestyle, diabetic patients remain at higher risk for fractures.

Donnelly and colleagues from the Hospital for Special Surgery in New York City have received a grant from the National Institutes of Health to analyze bone tissue samples and determine why type 2 diabetes degrades bone material properties. She hypothesizes that it could have something to do with a type of crosslink called “advanced glycation endproduct” produced in the tissue of diabetes. “Patients with type 2 diabetes have poor glycemic control, and so the extra glucose in the blood interacting with the collagen in their bone over a long period of time gives an opportunity for these crosslinks to form in the bone. And so we think more of these types of crosslinks accumulating over time leads to a more brittle bone,” explained Donnelly.

Similarly, the role of variations in different bone properties of patients with osteoporosis has not been extensively studied. Earlier this year, Donnelly received a Faculty Early Career Development Award from the National Science Foundation to identify and predict how changes in bone tissue composition will affect bone fracture increasing duration of bisphosphonate use. This suggests prolonged use in some patients may actually reduce bone toughness.

It’s expensive and time consuming to develop a new drug, but Donnelly says her research may yield other options. “Maybe we need to say, ‘here’s the subset of patients who are at high risk of atypical fractures.’ For them, maybe they need a drug holiday where you basically take a break from the drug for a year and let your cells remodel the bone normally.”

Radiographs showing a) a stress reaction (arrow) on the lateral proximal femoral cortex and a2) an atypical subtrochanteric fracture sustained autranmatically in the same patient 48 hours later; and b) a typical spiral subtrochanteric fracture.
### FACULTY AWARDS

**Ober receives SPST award**

Christopher Ober, the Francis Norwood Bard Professor of Materials Engineering, was awarded the 2015 Society of Photopolymer Science and Technology (SPST) Outstanding Achievement Award for his development of new advanced photoresist for microelectronics. The award is established to praise the distinguished contributions of scientists who have made significant achievements in photopolymer science and technology.

**Robinson promoted, receives Fulbright award**

Richard Robinson has been granted tenure and promoted to associate professor. He also received a 2015 Fulbright Scholar award. The Core Fulbright Scholar Program provides approximately 600 teaching and research grants to U.S. faculty and experienced professionals in a wide variety of academic and professional fields.

**Donnelly receives NSF CAREER Award**

Eve Donnelly, assistant professor and Dale R. Corsini BesozziCentennial Faculty Fellow, received the prestigious NSF CAREER Award for her proposal, “Role of Variations in Tissue Material Properties in Bone Fracture Behavior.” The grant will support Donnelly’s research into how changes in bone tissue that result from osteoporosis affect bone fracture behavior.

**Kuhn receives 2016 IEEE Frederik Philips Award**

Kelin Kuhn, the Mary Upsen Visiting Professor, was named recipient of the 2016 IEEE Frederik Philips Award for outstanding accomplishments in the management of research and development resulting in effective innovation in the electrical and electronics industry, with the following citation: “For technical leadership in the development and implementation of breakthrough CMOS technology.”

**Wiesner named PMSE Fellow**

Uli Wiesner, the Spencer T. Olin Professor of Engineering, has been elected as a Fellow to the Division of Polymeric Materials: Science and Engineering (PMSE) of the American Chemical Society (ACS). His election to this honor by his peers reflects the many impactful contributions he has made to the field of polymer science and engineering.

**New graduate studies leadership appointed**

Professor Emmanuel Giannelis was appointed for a two-year term as associate dean for research and graduate studies. Associate professor Shif Baker has been appointed as the director of the M.Eng program and senior lecturer Julie Nucci was hired as the associate director of the M.Eng program.

**Robinson, Umbach, Wiesner win excellence awards**

Professors Richard Robinson and Uli Wiesner were individually awarded the College of Engineering Research Excellence Award recognizing their contributions and leadership in research. Adjunct professor Kit Umbach earned an Advising Excellence Award. The three faculty were recognized during a luncheon on Nov. 18.

### STUDENT AWARDS

**NSF Graduate Fellowship winners announced**

We congratulate our NSF Graduate Fellowship Winners: Reum Scott (Estroff Group), Alicia Cintora (Ober Group) and Megan Hill (undergraduate student in the Thompson Group). Honorable mention: Henry Herbol (Clancy / Thompson Groups) and Sarah Hesse (Wiesner Group).

**Emily Bauer and Joseph Begun**

Emily Bauer and Joseph Begun conducted a research project in collaboration with ZYMtronix Catalytic Systems, Inc. as a part of a Fall 2014 MSE Senior Lab corporate project team. ZYMtronix, a start-up company with roots in the Giannelis Group, is housed in the Kevin M. McGovern Family Center for Venture Development in the Life Sciences, more commonly known as the Weill incubator. Stephane Corgie noted that, “Working with a group of MSE students on their semester long project was a great experience. The project—well structured and quite ambitious—benefited from the individual skill set of the MSE group and the synergy between students and faculty advisor. The curiosity and creativity of the group allowed ZYMtronix to explore some fundamental aspects of its platform technology.” For Joseph Begun, “This senior lab project gave an incredibly immersive feel of what doing research in an industry job could be like.” Bauer and Begun embraced the entrepreneurial spirit by applying for a grant through VentureWell, which offers entrepreneurship training via an integrated program of funding, coaching and investment. Last fall they received a VentureWell E-Team Program Stage 1 Grant, submitted with MSE adjunct professor Julie Nucci, and ZYMtronix Founder and CEO Stephane Corgie, Ph.D., as their faculty and corporate mentors. The $5,000 Stage 1 Grant allowed Bauer and Begun to delve more deeply into the business aspect of ZYMtronix. They attended a workshop in Cambridge, Mass., over winter break where they learned about value propositions, market analysis and competition analysis. At the conference they gained an appreciation of all the elements that go into a successful business and product. They also had the opportunity to network with about 20 other student start-up teams and learn about their products and businesses, as well as their strategies for starting a successful venture.

This spring, the same team submitted and received a $20,000 Stage 2 Venture Well Grant, which will fund student stipends, equipment and supplies, and a second business development workshop, which the students attended in August. This Stage 2 grant leveraged their senior lab research and applied it to the development and commercialization of a pesticide-free seed-coating technology to destroy plant pathogens during germination.

**Dawley wins poster award, trip to Seoul**

Graduate student Natalie Dawley (Schlom Research Group) won the P&G Best MSE Poster Award for 2015 at our recent MSE 50th. She also earned an all-expense-paid, two-week trip to Ewha University in Seoul (the top women’s university in South Korea) as part of Expanding Horizons: Ewha-Luce International Seminar for Women Graduate Students in the U.S. and East Asia.

**Senior Lab students conduct research project with ZYMtronix**

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**Senior Lab students conduct research project with ZYMtronix**

Emily Bauer and Joseph Begun conducted a research project in collaboration with ZYMtronix Catalytic Systems, Inc. as a part of a Fall 2014 MSE Senior Lab corporate project team. ZYMtronix, a start-up company with roots in the Giannelis Group, is housed in the Kevin M. McGovern Family Center for Venture Development in the Life Sciences, more commonly known as the Weill incubator. Stephane Corgie noted that, “Working with a group of MSE students on their semester long project was a great experience. The project—well structured and quite ambitious—benefited from the individual skill set of the MSE group and the synergy between students and faculty advisor. The curiosity and creativity of the group allowed ZYMtronix to explore some fundamental aspects of its platform technology.” For Joseph Begun, “This senior lab project gave an incredibly immersive feel of what doing research in an industry job could be like.” Bauer and Begun embraced the entrepreneurial spirit by applying for a grant through VentureWell, which offers entrepreneurship training via an integrated program of funding, coaching and investment. Last fall they received a VentureWell E-Team Program Stage 1 Grant, submitted with MSE adjunct professor Julie Nucci, and ZYMtronix Founder and CEO Stephane Corgie, Ph.D., as their faculty and corporate mentors. The $5,000 Stage 1 Grant allowed Bauer and Begun to delve more deeply into the business aspect of ZYMtronix. They attended a workshop in Cambridge, Mass., over winter break where they learned about value propositions, market analysis and competition analysis. At the conference they gained an appreciation of all the elements that go into a successful business and product. They also had the opportunity to network with about 20 other student start-up teams and learn about their products and businesses, as well as their strategies for starting a successful venture.

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The Department of Materials Science and Engineering (MSE) has opened a nanomaterials research laboratory to the public for the first time, expecting to draw interest from students, researchers and companies looking to gain access to its state-of-the-art equipment and spark innovations in energy, medicine and technology.

The unique opportunity comes with the expiration of a grant from the King Abdullah University of Science and Technology (KAUST), which established Abdullah University of Science and Technology. The partnership has ended, but the equipment and interest in nanomaterials research remains.

MSE is leading the open-door effort along with the School of Chemical and Biomolecular Engineering (CBE) and is rebranding the 4,000-square-foot lab as the Center for Nanomaterials Engineering and Technology (CNET). For a fee, anyone from undergraduates to industry giants can access the lab and take a new material from concept to prototype.

The lab—which includes equipment for materials synthesis, physical characterization and scale-up—can be used to develop and analyze materials for applications including carbon capture and conversion, electrochemical energy storage in batteries and hydrogels for biomedicine and drug delivery.

“It will provide Cornell research groups with access to unique state-of-the-art equipment and facilities. Many groups have indicated enthusiasm for the opportunity to use this equipment,” said Bruce van Dover, CNET Co-Director and MSE Chair, of the primary mission of the center. “The facility will enhance their productivity and enable studies that would otherwise be prohibitively expensive.”

The center will also serve as a platform that start-ups and small companies can use to develop technology and prototypes in their evolution into larger companies with comprehensive in-house facilities, said van Dover. “This will contribute to the economic development of the local area, the state and the nation,” he added.

Lynden Archer, CNET Co-Director and Director of CBE, says the unique infrastructure in the facility has already demonstrated its ability to take products from concept to early stage commercialization. “For the last seven years my group has pursued research on design, synthesis and analysis of a family of nanoparticle-hybrid polymer materials that emerged as important candidates as electrolytes in batteries. Termed NOHMs, NanoScale Organic Hybrid Materials, the materials improve battery safety and performance by both physical and chemical pathways. The concept was spun out to create a technology start-up company called NOHMs Technologies, that was initially located in Cornell’s Langmuir Labs. Ultimately the NOHMs team outgrew their space in Langmuir and moved to Rochester’s Eastman Business Park to pursue the next phase of its development,” said Archer.

Aside from local users, the open lab is expected to draw national interest from major companies from the energy, food, medical and electronics industries as part of a new industry-university institute under development within CNET. About 20 companies will eventually be invited to participate in the partnership under the auspices of a new industry-university institute under development within CNET.

CNET has been open since the beginning of October and those interested in taking advantage of the opportunity are encouraged to visit its website at http://cnet.research.engineering.cornell.edu for more information.

“We will encourage faculty to envision ways in which CNET can be a center that enables collaborative and multidisciplinary advances in the understanding and technology of new materials,” said van Dover.

MSE OPENES NANO LAB TO PUBLIC TO SPARK INNOVATIONS IN ENERGY, MEDICINE, TECH
2015
DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING FACULTY

On Bench: (left to right) Jack Blakely, Professor Emeritus; R. Bruce van Dover, Director, MSE; Nicole Benedek, Assistant Professor; David Grubb, Associate Professor (retired).

Directly behind bench: Delphine Gourdon, Assistant Professor; Chekesha Liddell Watson, Associate Professor; Dieter Ast, Professor Emeritus; Rüdiger Dieckmann, Professor; Julie Nucci, Adjunct Professor & Director, M.Eng. Program; Lara Estroff, Associate Professor; Shefford Baker (blue shirt, yellow tie) Associate Professor; Eve Donnelly, Assistant Professor; Dale R. Corson Sesquicentennial Faculty Fellow; Grace Huili Xing, Professor; Emmanuel Giannelis, Walter R. Read Professor of Engineering.

Next row: Stephen Sass, Professor Emeritus; Christopher K. Ober, Francis Norwood Bard Professor of Materials Engineering; Darrell Schlom, Herbert Fisk Johnson Professor of Industrial Chemistry; Michael Thompson, Associate Professor; Jin Suntivich, Assistant Professor; Uli Wiesner, Spencer T. Olin Professor of Engineering; Debdeep Jena, Professor.
ENHANCE THE GRADUATE EXPERIENCE

Graduate Fellowships
Atttracting talented graduate students to the department is a key goal in our pursuit of excellence in research. Your gift will allow MSE to meet its goal of providing competitive graduate fellowships to every first year graduate student enrolled in the Materials Science and Engineering program.

Awards for Students
Junior Class Awards to recognize highest achieving students.
Teaching Assistant Awards in recognition of the top graduate teaching assistants each academic year.
Research Excellence Awards, awarded to MSE Ph.D. students and post-docs in recognition of their research contributions.

MODERNIZE & UPGRADE THE INSTRUCTIONAL LABORATORIES

Modernizing the instructional laboratories is a high priority for sustaining the department’s reputation for excellence in educating students. The Instructional labs are used by undergraduates from across the College of Engineering, in addition to the MSE Junior and Senior lab teams.

ATTRACT TALENTED FACULTY

Endow a named chair in Materials Science and Engineering
Gifts to this fund will support salary and research start-up costs for hiring a member of the faculty who will facilitate growth of Materials Science and Engineering.

Don Thomas

Previous Alumni Award Winners:

- 2008:
  - Mr. Fred P. Keller, Chairman and CEO of Cascade Engineering
  - Dr. Roger Poeppel, Senior Engineer, Argonne National Laboratory
  - Professor Edwin L. Thomas, Dean of Engineering, Rice University
  - Dr. Rick Lih-Shyang Tsai, Chairman and CEO of Chungen Telecom Co., Ltd.

- 2010:
  - Dr. Donald E. Morel Jr., Chairman and CEO of West Pharmaceutical Services, Inc.
  - Dr. Gregory J. Glavin, President and CEO of Kionix
  - Dr. Harriet Kung, Associate Director of Science for Basic Energy Sciences, U.S. Department of Energy
  - Mr. Jung-hyun Oh, President and CEO of SSCP Co. Ltd.

- 2011:
  - Dr. Sunggi Baik, President of Pohang University of Science and Technology (POSTECH)

- 2013:
  - Richard Vaia, Technology Advisor, U.S. Air Force Research Laboratory

- 2014:
  - Karel K. Czanderna, President and CEO of Flexsteel Industries, Inc.

We are grateful to the many alumni and friends of the department for their generous support of its programs over the last 50 years. Your generosity allows us to sustain and enhance our programs and reputation as a top tier Materials Science and Engineering department. Please review the list of giving opportunities below and consider a gift that will help MSE accomplish its goals.

For more information on these or any other giving opportunities, contact

June Losurdo, Director of Development
jml235@cornell.edu • 607-254-1643

This year’s MSE Alumni Award recipient is Don Thomas. He is the former director of the Hackerman Academy of Mathematics and Science at Towson University working to encourage and inspire young students to follow in his footsteps to become our next generation of scientists, engineers, astronauts, and explorers. Dr. Thomas earned both his M.S. and Ph.D. degrees in Materials Science and Engineering at Cornell in 1980 and 1982 respectively. http://ohioastronaut.com/about-don