

## Department of Materials Science and Engineering

The faculty, students, staff, and postdoctoral fellows of the [Department of Materials Science and Engineering](#) (DMSE) strive to innovate in the way the department develops and teaches the science and engineering of solid matter. DMSE's external perception continues to be strong, with top rankings in U.S. News & World Report's graduate and undergraduate lists, and in QS World University Rankings by subject. Department faculty, staff, and students are invited to share the field of materials science and engineering with talks, media appearances, and demonstrations. This year, thousands of visitors toured DMSE labs on the Infinite Corridor during the MIT Open House, and were invited to participate in hands-on activities demonstrating superconductors, 3D printing, magnetism, and more.

We were very sorry to learn of the deaths of two long-time friends of the department: Koichi Masubuchi, professor emeritus of ocean engineering, held a joint appointment in DMSE and collaborated with some of our faculty; Dr. John Cahn, a former faculty member, was a true giant in our field, a mentor to many, and an inspiration.

### Educational Initiatives

For close to 50 years, 3.091 Introduction to Solid-State Chemistry has met the chemistry General Institute Requirements while providing many first-year students with a glimpse of materials science and engineering. This past year, professor of materials science and engineering Jeffrey C. Grossman became the 3.091 instructor. He brought MIT's *mens et manus* ("mind and hand") credo to the subject by creating "goodie bags" —kits of tools and materials that students use to answer weekly problem sets. After a successful first offering, Professor Grossman applied to the d'Arbello Fund for Excellence in Education for support to continue and expand the goodie bags for the upcoming year.

DMSE continues to expand its educational offerings, both on campus and online. This year, professor of materials science and engineering Eugene A. Fitzgerald was the instructor for 15.373J/2.912J Venture Engineering, a subject that teaches students how to move from a startup idea to an established enterprise. The subject was sponsored by the MIT Innovation Initiative and the Martin Trust Center for MIT Entrepreneurship. The Office of Digital Learning awarded funding to associate professor of materials science and engineering Silviya Gradečak and Dr. Jessica Sandland to develop an MITx version of 3.012 Fundamentals of Materials Science and Engineering. 3.032x Mechanical Behavior of Materials, taught by professor of materials science and engineering Lorna J. Gibson, was adapted to be offered in three modules, allowing more flexibility for students. Professor Gibson also created a widely popular online seminar explaining how woodpeckers do not incur brain injuries from impact. In AY2016, DMSE offered seven unique online courses through edX (a platform offering online courses and classes) in 18 total course runs, reaching more than 225,000 students in 179 countries.

Assistant professor of materials science and engineering Elsa Olivetti and other members of the departmental undergraduate committee initiated an industry seminar,

inviting alumni to campus to discuss career paths. Students very much valued the varied perspectives these alumni bring.

### **Undergraduate Education**

With an incoming sophomore class of 41 students, DMSE's undergraduate enrollment will be 112 students, with 69.6% women, 21.4% underrepresented minorities, and 4.5% international students. Nine students are designated Course 3-A (a flexible degree program often chosen by students intending to continue their education in the fields of medicine, business, or law). This past academic year, four students graduated with a double major, and three current students are declared double majors.

### **Graduate Education**

The department's graduate enrollment remains strong, numbering 180 in fall 2015. Approximately 24% of graduate students are women and 2.8% are underrepresented minorities. Nine DMSE students participated in the Program in Polymers and Soft Matter. For AY2017, the department anticipates an incoming class of 30, approximately 27% of whom are women.

### **Student Organizations**

DMSE's student organizations plan events and develop activities for their fellow students and for the community. This past year, they again created a freshman pre-orientation program, welcomed new students to MIT during orientation, helped with recruiting efforts, developed demonstrations for the Cambridge Science Festival and the MIT Edgerton Center, and arranged lunch and dinner events with faculty and alumni. In addition, they participated in various activities for MIT's Century in Cambridge.

The 2016–2017 Society of Undergraduate Materials Scientists officers are president Rebecca Gallivan, vice president Cynthia Lo, career development chairs Nagisa Tadjfar and Melissa McGee, secretary/publicity chair Madison Sutula, social chairs Joseph Valle and Sarah Grunsfeld, historian Burhan Azeem, and lounge chair Eveline Postelnicu.

The Graduate Materials Council (GMC) officers for 2016–2017 are president Jérôme Michon; vice president Kevin Bogaert; treasurer William Lindemann; secretary/publicity chair Olivia Hentz; academic committee members Karthik Akkiraju, Sarah Goodman, and Frank Ethan Rosenberg; athletics chair Bradley Nakanishi; social chairs Hugo Uvegi, Peter J. Santos, Stephen Filippone, and Carolyn Joseph; alumni committee members Gufan Yin and Jonathan Hwang; coffee hour chairs Yusu Liu and Zhibo Zhao; departmental committee on graduate students representatives Christopher Heidelberger, Daniil Kitchaev, and Michael Rein; Graduate Student Council representatives Peter Su and Abigail Regitsky; outreach committee members Emiko Zumbro and Irina Rasid; Materials Research Society Student Chapter president Seth Cazzell; and sustainability chair Owen Morris.

### **Facilities**

During the past year, DMSE renovated and repurposed several spaces to meet the needs of increased staff. Among the changes was a reorganization of DMSE Headquarters

in Building 6, relocating administrative staff into the DMSE main office and creating a shared suite for lecturers and technical staff, which provided increased collaboration and a more efficient workflow. Several labs were renovated for the new DMSE faculty:

- Assistant professor of metallurgy C. Cem Tasan was provided with 1,000 square feet of recently renovated lab space in Building 8.
- Assistant professor of materials science and engineering Rafael Jaramillo's 1,300-square-foot lab renovation (completed in June 2016) included a clean room with fume hoods, a synthesis lab with furnace and metal organic chemical vapor deposition system, a molecular beam epitaxy room with a molecular beam epitaxy system and glove box, and a characterization room.
- Associate professor of materials science and engineering Juejun Hu's lab facility renovations (fall 2015) included 400 square feet in Building 13 and a 500-square-foot lab in E25.

## Fundraising

DMSE continued to show strong fundraising success in FY2016, receiving \$3.69 million in new gifts and pledges compared to an average of \$2.17 million annually over the previous five years. Major contributions include \$2 million from Vasilis Salapatas (SM '61, PhD '66) to create a new visiting faculty fellow position in archaeological materials, \$1 million from Ingo Wender to create a new graduate fellowship, and a \$260,000 bequest from George Pearsall (ScD '61) to support fellowships and discretionary funding for the department. The department also participated actively in the launch of the MIT Campaign for a Better World, the Institute's \$5 billion fundraising effort. DMSE's faculty and students were profiled in campaign materials and represented MIT with talks and demonstrations at the May 2016 public launch.

## Personnel

Jennifer Rupp will start as assistant professor in January 2017. A French and German native, she is currently an assistant professor of electrochemical materials at ETH Zurich in Switzerland. She studied at the University of Vienna before receiving a PhD in Materials at ETH Zurich. She has performed research at the National Institute of Materials Science in Tsukuba, Japan, and at MIT with professor of materials science and engineering Harry Tuller and associate professor of nuclear science and engineering and materials science and engineering Bilge Yildiz. Her research lies primarily in solid-state information memory systems, energy storage, and harvesting devices. She has worked on new material architectures and ionic transport-structure relations for solid-state ionic conductor thin films, electrochemistry and system aspects for memristors, solid-state batteries, solar-to-fuel conversion, and micro-fuel cells. She was nominated as one of the top 40 scientists under the age of 40 at the World Economic Forum. She also received the Spark Award for the most innovative and economically important invention of the year at ETH Zurich and the Kepler Award for European Young Scientists for "new energy materials," awarded by the European Academy of Science.

Assistant Professor Jeehwan Kim accepted a joint appointment with DMSE effective January 2016. He joined the Department of Mechanical Engineering faculty in September

2015. He received a BS from Hongik University in South Korea, an MS from Seoul National University, and a PhD from the University of California at Los Angeles (2008), all in materials science.

Robert Macfarlane, Julia Ortony, and Cem Tasan all officially joined DMSE during the past academic year.

Polina Anikeeva will be promoted to associate professor, effective July 1, 2016. She joined the DMSE faculty in 2011 and holds the Class of 1942 Career Development Professorship. Her research is at the interface of materials science, electronics, and neurobiology with the goal of advancing understanding and treatment of disorders of the nervous system. Her group designs, synthesizes, and fabricates optoelectronic and magnetic devices that manipulate and record neuronal activity and development.

Juejun Hu will be promoted to associate professor, effective July 1, 2016. He came to MIT in 2015 from the University of Delaware where he was a tenure-track assistant professor. He holds the Merton C. Flemings Career Development Professorship. His research is in multifunctional photonic integration, which he applies to address new applications and needs in environmental monitoring, renewable energy harvesting, communications, and biotechnology.

Yang Shao-Horn was named the W.M. Keck Professor of Energy, given by the W.M. Keck Foundation.

Angela Belcher was awarded the James Mason Crafts Professorship. Also, she was named to lead MIT's pK-12 Action Group, an initiative charged with coordinating, integrating, and strengthening approximately 100 educational programs aimed at students of all ages, from preschool through high school.

Jeffrey Grossman was awarded the Morton and Claire Goulder and Family Professorship in Environmental Systems (established in 2001) to further environmental research across the disciplines.

The Provost's Office appointed Krystyn Van Vliet and Eugene Fitzgerald as Singapore Research Professors for 2016. This honor reflects their commitment to the mission and objectives of the Singapore-MIT Alliance for Research and Technology program.

Shaymus Hudson will join DMSE as technical instructor and lab manager effective July 1, 2016. He earned an SB from MIT in 2012 and a PhD from Worcester Polytechnic Institute in 2016, both in materials science and engineering. His doctoral research involved the use of laser-induced breakdown spectroscopy as a tool for impurity detection in molten aluminum. This earned him the 2014 Ruddle Award from the North American Die Casting Association and the 2015 Harmon Award from the Foundry Educational Foundation.

Geetha Berera, Meri Treska, and Michael Tarkanian will be promoted from lecturer to senior lecturer effective July 1, 2016.

Christine Ortiz stepped down from her position as dean of graduate education effective July 1, 2016. She will be on sabbatical leave for the next academic year working on new projects and educational initiatives.

Michael Demkowicz accepted a position as associate professor in the Department of Materials Science and Engineering at Texas A&M University.

### **Research Highlights**

Research in materials science and engineering is necessary to address present and future needs and challenges in energy storage, medicine, transportation, recycling, infrastructure materials, and communications. President Barack Obama's administration recognized that funding and collaboration are necessary to establish technology manufacturing in the United States. To achieve this end, the National Network for Manufacturing Innovation has awarded funding to public-private partnerships among academia, government, and industry. DMSE faculty will be leaders in two of these major research centers bringing materials science to new industrial efforts.

Professor of materials science and engineering Lionel Kimerling is one of the MIT leaders of the American Institute for Manufacturing Integrated Photonics, headquartered at the State University of New York Polytechnic Institute. Federal funds of \$110 million will be combined with \$500 million from state and local governments, manufacturing firms, and other educational institutions. Photonics research will continue advances in computing speed and efficiency, a hardware need in an increasingly software-dependent society.

Professor of materials science and engineering Yoel Fink is leading the Advanced Functional Fabrics of America Institute, an effort he says will create fibers with the ability to "see, hear, and sense their surroundings; communicate; store and convert energy; monitor health; control temperature; and change their color." This initiative will receive \$75 million in federal funds, with \$242 million contributed by the US Department of Defense, state and local governments, industry, and other educational and nonprofit organizations. In the 19th century, Massachusetts was a home for textile manufacturing innovation; the Advanced Functional Fabrics of America Institute will make it the leader in the 21st century.

In collaboration with Nike, Inc., the MIT Climate CoLab launched a new competition called Materials Matter, which seeks innovative ways to view, use, and make materials. The competition was inspired by a DMSE report that evaluates the importance of cotton, leather, polyester, and rubber, and details the environmental impacts of each material throughout the supply chain.

Efforts headed by assistant professor of metallurgy Antoine Allanore highlighted the need to rethink the current technology and market of potash fertilizers, which led to the development of the Potash Workshop, the first international workshop on alternative potash.

A team from the W. David Kingery Ceramics and Glass Laboratory collaborated with personnel from the Media Lab to develop a new way to 3D-print glass, which allows

for the glass to be optically transparent, as opposed to sintered 3D-printed glass, which results in a cloudy and brittle final product.

Professor Tasan and colleagues developed a new approach to high-entropy alloy design by focusing on the alloy's metastability rather than its stability. A new alloy designed using these principles and composed of iron, manganese, cobalt, and chromium could potentially open new avenues for the design of more versatile structural alloys.

Professor Anikeeva's group designed a new, non-invasive technique for monitoring and controlling cells through enhanced, naturally occurring and weakly magnetic protein nanoparticles called ferritin. These genetically coded particles are introduced to target cells, making them hypermagnetic and allowing them to be sorted through magnetic techniques such as magnetic resonance imaging, allowing for more effective and targeted control of cells.

Assistant professor of materials science and engineering Niels Holten-Andersen's group has invented a fluorescent polymer gel with light-emitting sensors that self-repair. These gels change color when disrupted, which makes the materials an effective sensor for detecting defects and failures. The gels are now being developed as a coating to help identify structural failures in systems such as underwater electrical cables.

Associate professor of materials science and engineering Alfredo Alexander-Katz discovered that long-range magnetic particles interspersed with inert particles are drawn to one another when introduced to a rotating magnetic field, even when separated by distances tens of times their size. This observation could potentially lead to a better understanding of the behavior of natural biological systems, or new methods for creating synthetic active materials, which could be useful for selectively delivering drugs into specific parts of the body.

### **Awards and Honors**

Professor Anikeeva received the School of Engineering's Junior Bose Award for Excellence in Teaching from MIT's School of Engineering for her participation in 3.024 Electronic, Optical, and Magnetic Properties of Materials; 3.156 Photonic Materials and Devices; and 3.46 Photonic Materials and Devices. Professor Anikeeva was part of an international team of researchers who were awarded funding through the Bioelectronics Innovation Challenge sponsored by GlaxoSmithKline. *Technology Review* named Professor Anikeeva one of its 2015 "35 Innovators under 35" for her development of optoelectronic and magnetic approaches for interrogation of neural function. The National Science Foundation featured Professor Anikeeva's multifunctional fibers research in a news article accompanied by a video on its website.

Professor of nuclear engineering and materials science and engineering Ronald Ballinger received the Creative Advising Activity Award from MIT's Undergraduate Advising and Academic Programming office for his role as freshman advisor. He was praised for his innovative aviation activity where students were able to fly in four-person planes over New England's fall foliage.

The National Academy of Inventors named Professor Belcher a 2015 fellow for her 25 US, and several foreign, patents focused on evolving organisms to improve energy storage and medical imaging and detection.

Professor of engineering Michael Cima received funding from MIT's Tata Center for his project, Implants for Cost-Effective and Accessible Intraperitoneal Delivery of Chemotherapy.

Professor Fink was awarded the Collier Medal, created to honor the memory of fallen MIT Officer Sean Collier, for connecting cancer patient and student Steven Keating to doctors who were able to successfully remove his brain tumor.

Professor Fitzgerald was honored with a 2016 Distinguished Alumni Award from Cornell University's Department of Materials Science and Engineering in recognition of his extraordinary contributions to the science and engineering of semiconductor materials and his significant role in commercializing technologies based on new materials and devices.

Professor Gibson won a Teaching with Digital Technology Award for her work in 3.032 Mechanical Behavior of Materials. The award was co-sponsored by MIT's Office of Digital Learning, the Dean of Undergraduate Education, and the Office of the Dean for Graduate Education.

Professor Gradečak was awarded the Graduate Materials Council Teaching Award for her subject 3.34 Imaging of Materials.

Professor Grossman was awarded a 2015 Abdul Latif Jameel World Water and Food Security Lab Solutions grant for his project, Fouling-Resistant Nanoporous Membranes. MIT's Margaret MacVicar Faculty Fellows Program named Professor Grossman a 2016 fellow for his ability to make abstract concepts more concrete for students, as well as for his unbridled enthusiasm.

Business Insider named Professor Olivetti one of the most impressive professors at MIT.

Professor of materials science and engineering Caroline Ross received the GMC Advising Award.

Professor of materials chemistry Donald Sadoway was awarded one of the MIT Energy Initiative Seed Fund grants for his project, Aluminum Polymer Battery for Automobile Propulsion.

Professor of metallurgy Christopher Schuh accepted a four-year appointment as coordinating editor of *Acta Materialia*.

Professor Shao-Horn won a 2016 Battery Division Research Award from The Electrochemical Society.

On the occasion of his 60th birthday, Professor Emeritus Subra Suresh, now president of Carnegie Mellon University, was honored with a symposium recognizing his research contributions.

Professor Tuller was elected a Distinguished Life Member of The American Ceramic Society in 2016, the most prestigious level of membership. He was also elevated to senior member of the Institute of Electrical and Electronics Engineers, the highest professional grade of the organization for which a member may apply, requiring experience and reflecting professional accomplishment and maturity.

Professor Yildiz's team was awarded one of the MIT-Imperial College London Seed Fund grants in collaboration with the project Control of Interfaces for Increasing the Power Density and Durability of Solid State Batteries. Her team was also awarded one of the MIT Energy Initiative Seed Fund Program grants for its project, Design of Metal-Oxide Surfaces for Fast Oxygen Exchange in Fuel Cells, Synthetic Fuel Production and Separation Membranes.

Professor Emeritus Sidney Yip was named one of *Technology Review's* Seven over 70 for his continued research, including a new recipe for concrete that increases its strength while reducing the carbon emissions associated with producing cement.

Professor Anikeeva and Professor Yet-Ming Chiang were invited to speak at EmTech 2015, a two-day event organized by *Technology Review* to explore new technologies shaping business, society, and the world. Professors Anikeeva and Grossman were speaker participants in the National Academy of Engineering Regional Meeting and Symposium held at MIT in April 2016.

At the 2015 MIT Solve event, Professor Belcher co-led the Fuel pillar, along with professor Robert Armstrong of the MIT Energy Initiative and Department of Chemical Engineering. Professors Belcher and Sadoway were invited to participate in a global climate change discussion as a part of an MIT delegation prior to the United Nations Climate Change Conference in Paris. Professor Belcher and professor of materials science and engineering and biological engineering Darrell J. Irvine were invited to participate in Kendall Square Convergence 2016, a full-day conference showcasing life science innovations coming out of Kendall Square. Professor Belcher was also invited to speak at the Department of Civil and Environmental Engineering Rising Stars Workshop, a two-day event for top early career women in civil and environmental engineering and related fields who are interested in careers in academia.

Professor Chiang was asked to participate in the MIT Startup Exchange, presented by the MIT Industrial Liaison Program. Professors Chiang and Shao-Horn were invited speakers at MIT Solar Day, sponsored by the MIT Energy Initiative. Professors Chiang and Grossman were invited speakers at CERAWEEK, the annual IHS energy conference in Houston.

Professors Cima and Gibson participated in ScienceWriters2015, the largest conference for science writers in the nation.



MIT's Tau Beta Pi honor society invited Professor Fitzgerald to deliver a Leonardo da Vinci dinner lecture titled "Real Innovation: How STEM Impacts Society." Professor Schuh was an invited speaker at the 2016 International Conference on Powder Metallurgy and Particulate Materials.

### Undergraduate Awards

Ian Chesser '16 received the award for Outstanding Senior Thesis. Chesser's thesis, "Selecting for Copper-Niobium Interfaces with Seeded Accumulative Roll Bonding," investigated crystal rotation induced by plastic deformation in metal composites and assessed the roles of heterophase interfaces in this phenomenon.

Christiana La '16 was the recipient of the Joseph M. Dhosi Outstanding Internship Award for her role at Applied Materials (Metal Deposition Group).

Andrew Liotta '16 was named Outstanding Senior for his academic and personal achievements. Liotta graduated with a perfect 5.0 GPA. He was an Undergraduate Research Opportunities Program student in Professor Allanore's group, president of Sigma Chi Fraternity, and a member of the MIT Solar Electric Vehicle Team. He also was elected to MIT's Tau Beta Pi engineering honor society in 2015.

Jesus Moreno '16 was invited to join Phi Beta Kappa.

George Varnavides '17 won the Julian Szekely Award for Outstanding Junior and the Undergraduate Teaching Award for his contributions to 3.024 Electronic, Optical, and Magnetic Properties of Materials.

Jonathan Paras '18 was named Outstanding Sophomore for his demonstrated enthusiasm for materials science through proactive pursuit of industrial opportunities and academic research, such as his two Undergraduate Research Opportunities Program positions and his impressive academic grades.

Clarissa Towle '16 received the Undergraduate Teaching Award for her significant contributions to 3.091 Introduction to Solid-State Chemistry.

Mary Elizabeth Wagner '16 was honored with the Horace A. Lubin Award for DMSE Community Service. She served as president of the Society of Undergraduate Materials Scientists and was a teaching assistant for 3.016 Mathematical Methods for Materials Scientists and Engineers. She also participated in departmental K-12 initiatives such as Girls Day and Science on Saturday at the MIT Museum.

Teresa de Figueiredo '17, Lisa Kong '17, and Tiffany Yeh '17 were named Burchard Scholars by the MIT's School of Humanities, Arts, and Social Sciences. The award honors sophomores and juniors who demonstrate academic excellence in the humanities, arts, and social science, as well as in science and engineering.

Chen Wang '17 won the MIT IDEAS Global Challenge with team Tactile for their invention that allows real-time conversion of printed text to Braille.

## Graduate Awards

The department presented the award for Best PhD Thesis to Alan Lai of the Schuh Group for “Shape Memory Ceramics in Small Volumes.” Alan will be continuing his research as a postdoc through MIT’s Translational Fellows Program with the goal of starting his own company.

The Graduate Student Community Service Award was presented to Erica Lai for her dedication to the department and community. She served GMC co-chair and organized events for the MIT Museum’s Science on Saturday and Girls Day, MIT’s Century in Cambridge, and the Cambridge Science Festival.

The John Wulff Award for Excellence in Teaching was presented to Joshua Steimel for his work as a lab teaching assistant in 3.014 Materials Laboratory.

The Graduate Student Teaching Award was presented to Jee Soo Yoo for her work as a teaching assistant for 3.23 Electrical, Optical, and Magnetic Properties of Materials.

At the Materials Research Society 2015 fall Meeting in Boston, three DMSE graduate students received Silver MRS Graduate Student Awards. Ritchie Chen of the Anikeeva Group was honored for his work on magnetic nanoparticles for biomedical applications. Scott Grindy of the Holten-Andersen Group was honored for his work on “Exploring Elasticity and Energy Dissipation in Mussel-Inspired Hydrogel Transient Networks.” Kelsey Stoerzinger of the Shao-Horn Group was honored for her work on “New Insights in Oxygen Electrocatalysis from Epitaxial Oxide Surfaces.” At the spring 2016 meeting, Chia-Hao Chuang was awarded a Gold MRS Graduate Student Award for his presentation, “NT6: Colloidal Nanoparticles—From Synthesis to Applications.”

David Strubbe of the Grossman Group was part of team Firmi, which won first place in the 2015 MRS Fall Meeting Materials Hackathon.

Scott Grindy was one of 24 MIT graduate students who traveled to Washington, DC, to participate in the annual Science, Engineering, and Technology Congressional Visits Day.

Binghong Han won a Chinese Government Award for Outstanding Students Abroad for his research in reaction and degradation mechanisms for oxygen electrochemical processes in fuel cells and batteries. He has already first-authored or co-authored seven publications and collaborated on 14 papers that have appeared in top journals in the fields of energy and physical chemistry.

The winning team of the 2015 MADMEC competition was Glasswing. Team members invented a low-cost coating for solar cells that mitigates reflection, allowing the cells to absorb nearly all light and boost efficiency. Recent MADMEC teams have continued to develop their prototypes: Aquafresco, 2014 MADMEC winner, received a Massachusetts Clean Energy Center Catalyst Award, was Gold Winner of the MassChallenge 2015 Boston competition, and was profiled by many news outlets; CoolComposites, 2014 MADMEC second-place winner, has received an National Science Foundation Small

Business Innovation Research Phase I grant; and Embr Labs, 2013 MADMEC winner, received a National Science Foundation Small Business Innovation Research/Small Business Technology Transfer funding and is participating in the four-month 2016 MassChallenge Boston accelerator program.

### **Future Plans**

DMSE will complete several more lab renovations for its new faculty: Professor Macfarlane's 1,200 square feet of lab space in Building 13 will provide eight fume hoods and bench space to serve the needs of his chemistry-based research; 1,600 square feet of underutilized space in Building 8 will be renovated for Assistant Professor Ortony's office and lab needs. DMSE is in the early stages of lab and office space design for Professor Rupp. The current plan is very robust and calls for a main lab and office in Building 8 along with shared lab space in Building 13. These changes will provide a much-needed upgrade to aging lab space, give us the ability to share research and resources, and help to eliminate the defragmentation of existing DMSE research groups.

Graduate students have been invited to suggest ideas that will improve their research lives. Large and small proposals—from requests for new equipment to minor supplies—will be considered.

The Visiting Committee for the Department of Materials Science and Engineering will meet this fall. Faculty, staff, and students will have an opportunity to share their views on the department's teaching and research activities, lab facilities, and other resources. The department especially values the Committee's input as it prepares to integrate its activities with the new MIT.nano building.

**Christopher A. Schuh**

**Department Head**

**Danae and Vasilis Salapatas Professor of Materials Science and Engineering**