Department of Materials Science and Engineering

Over the past seven years, the faculty and leadership of the Department of Materials Science and Engineering (DMSE) have been working to position the department for a productive and fruitful future. More than a quarter of the department's faculty have been hired over that time period. These young and creative faculty members bring new ideas and energy, ensuring that the department's research and teaching programs will continue to be groundbreaking and influential. As the opening of the MIT.nano facility approaches, DMSE is preparing for new collaborations and revolutionary technical equipment that will bring MIT's materials research into a new age.

On a less public front, DMSE's administrative functions have also seen a transformation. Some two decades ago, MIT requested that DMSE and the Department of Chemical Engineering participate in a pilot program to share some administrative staff and functions in an office known as the Administrative Services Organization (ASO). In early 2017, on the recommendation of the DMSE Visiting Committee and with the support of the School of Engineering, DMSE worked with School of Engineering personnel to review administrative needs and processes and assess the effectiveness of the ASO function. The decision was made to disband ASO and create a new administrative structure to provide strong leadership and support to the DMSE faculty and staff. Finance and human resources personnel now work in DMSE headquarters, alongside the academic office, communications, development, space management, information technology, and environmental health and safety staff. This strong central office provides support to all of DMSE, working closely with support staff in particular to provide resources and training that will allow them to be more efficient and effective in their jobs.

The Department of Materials Science and Engineering has maintained its top position in *US News and World Report*'s graduate and undergraduate lists, in the QS World University Rankings by Subject, and in the Academic Ranking of World Universities by Shanghai Ranking Consultancy.

Educational Initiatives

The department continued to strengthen its online offerings in edX and MITx. This year, 3.024x Electronic, Optical and Magnetic Properties of Materials was added to DMSE's edX offerings. DMSE faculty and teaching staff have received funding to develop the thermodynamics part of 3.012 Fundamentals of Materials into a massive open online course and to integrate the Mathematica software into the MITx and edX platform. At the winter retreat, the faculty began discussion of future goals for the online offerings.

Undergraduate Education

With an incoming sophomore class of 31 students, DMSE's undergraduate enrollment will be 99 students, with 64.64% women, 28.28% members of underrepresented minority groups, and 3.03% international students. Twenty students are following Course 3-A, which is a flexible bachelor of science degree program often taken by students intending to continue their education in the fields of medicine, business, or law. This past academic year, three students graduated with a double major, and two current students have declared double majors.

DMSE joined the School of Engineering's New Engineering Education Transformation initiative. The Advanced Materials Machines thread combines aspects of Course 3-A and Course 2-A (Mechanical Engineering), teaching students about additive manufacturing, powder and casting processes, and advances in soft materials processing, among other practices. Elsa Olivetti, Atlantic Richfield Assistant Professor of Energy Studies, is leading DMSE's offering. Associate Professor Geoffrey S. D. Beach serves on the New Engineering Education Transformation Committee. DMSE is also participating in a new interdepartmental minor in polymers and soft matter, led by the Department of Chemistry.

Jeffrey Grossman, the Morton and Claire Goulder and Family Professor in Environmental Systems, taught Subject 3.091 Introduction to Solid State Chemistry. The subject continued to see increased enrollment. The "goodie bags," small take-home experimental kits used in problem sets and quizzes, are generating student enthusiasm inside MIT and pedagogical interest outside MIT. The expected class size in fall 2019 may mean that the lectures will be simulcast to another location.

W. Craig Carter, POSCO Professor of Materials Science and Engineering, and Professor Olivetti introduced a seminar, 3.001 Introduction to Materials Science and Engineering, that invites DMSE faculty to present their research and work to undergraduates. For students, the seminars provide an opportunity to interact with faculty members they may not have met, and to learn concepts and connections that they may have missed in other Course 3 subjects.

Graduate Education

The department's graduate enrollment remains strong, numbering 174 in fall 2017. Approximately 28% of the graduate students are women and 10% are members of underrepresented minority groups. Eleven DMSE students participated in the Program in Polymers and Soft Matter. For academic year 2019, we anticipate an incoming class of 33, 11 of whom are women.

DMSE received 533 of applications for graduate admission this year, a record number. The Recruiting, Admissions, and Placement Committee used a modified application for the first time. This application removed the request for a "statement of purpose," replacing it with three questions:

- Why do you want to come to MIT DMSE?
- Why are you a good fit for MIT DMSE?
- How does earning a graduate degree fit with your professional life goals?

The application also added specific questions about awards and opportunities. The committee believes that the new questions provide better insight into the applicants' motives and goals.

The Departmental Committee on Graduate Students is reexamining the curriculum and the process for doctoral candidates to pass the written and oral exams.

Student Organizations

DMSE's student organizations are great ambassadors for the department. In the past year they organized events and developed activities for their fellow students and for the community. These included the First-Year Pre-Orientation Program, orientation, recruiting efforts, the Cambridge Science Festival, Science on Saturday offerings, and lunch and dinner events with faculty and alumni.

The 2018–2019 Society of Undergraduate Materials Scientists officers will be Madison Sutula, president; Ximena Hasbach, vice president; Sofia Lobo and Vivian Song, career development chairs; social chairs David Wang and Stephanie Eiler, social chairs; Gloria Chyr (fall) and Jeremy Dudo (spring), historian and publicity chairs; Olivia Saouaf and Mindy Wu, apparel and commons chairs; and Carolyn Jons and Sophia Kioulaphides, outreach chairs. The sophomore representative is Mollie Wilkinson, the junior representative is Omar Laris, and the senior representative is Melody Wang.

The Graduate Materials Council officers for 2018–2019 will be Joshua Kubiak, president; Leonardo Zornburg, vice president; Paul Gabrys, treasurer; and P. J. Santos, secretary/publicity chair. Philipp Simons, Max L'Etoile, and Haoxue Yan will be Academic Committee members. Other officers will include Zachary Jensen, athletics chair; Katherine Mizrahi, Elad Deiss-Yehiely, Ty Christoff-Tempesta, and Eveline Postelnicu, social chairs; Hugo Uvegi and Richard Park, alumni committee; Margaret Lee and Isabel Crystal, coffee-hour chairs; Kevin Bogaert, Seth Cazzell, Paul Gabrys, and Jérôme Michon will be DCGS (Department Committee on Graduate Studies) representatives; William Lindemann and Somesh Mohapatra will be Graduate Student Council representatives; Edward Pang and Skylar Deckoff-Jones will be the outreach committee; Sarah Goodman, public service chair; Brian Traynor, sustainability chair; Shayna Hilburg, well-being chair; and Emiko Zumbro will be Materials Research Society student chapter president.

Facilities

Efforts to improve DMSE facilities this past year have focused on preparing and renovating lab and office spaces for new faculty members and on refreshing existing spaces used by graduate students, support staff, and administrative staff. In exchange for a basement room used to house computer servers for research groups, DMSE was allocated an office currently used by MIT Audio-Visual Services. This will mean a more efficient use of space and energy resources for DMSE and the Institute. Currently, the department plans to relocate the metallography laboratory functions, moving equipment and operations from Rooms 4-421 and 13-5016 to Room 4-017. As part of the administrative restructuring, offices around the DMSE headquarters suite were refreshed to create a more effective working environment for these new teams. Many DMSE offices and labs have been affected by MIT's ongoing project to replace windows in the Main Group, forcing some relocations and disruptions.

Fundraising

This year the Department of Materials Science and Engineering raised $631,800, including three significant gifts from individuals. The Saks Kavanaugh Foundation made another generous grant to continue the Kavanaugh Translational Innovation

Fellows Program. The grant was sufficient to award two fellowships to graduate students who are working to commercialize technologies, fully supporting them as they do further technical and business development. The department also received a generous gift to the DMSE Equipment Fund from an alumnus, which enabled the purchase of a 3D metal printer that will provide enhanced prototyping capabilities to our students. An alumnus made a generous unrestricted gift that is being channeled toward the start-up packages for our new senior hire.

Associate Professor of Geology Taylor Perron from the Department of Earth, Atmospheric, and Planetary Sciences was the second Archeological Visiting Faculty Fellow in DMSE, supported by a gift from Vasilis (SM ’61, PhD ’66) and Danae Salapatas. Perron partnered with Professors Heather Lechtman and Dorothy Hosler on a project to study dark earth soil enrichment techniques from the pre-Columbian Amazonian societies. They have been applying for grants to continue this project in the coming year.

Personnel

The department recognized a need to hire in the area of materials characterization and, after a careful search and much deliberation, chose to hire two senior people who are expected to have great influence on the field of materials science and engineering in years to come.

Rafael Gomez-Bombarelli joined the DMSE faculty as the Toyota Assistant Professor in Materials Processing in January 2018. He received a BS, MS, and PhD in chemistry from Universidad de Salamanca in Spain, followed by postdoctoral work at Heriot-Watt University and Harvard University. His research is on the role of molecular transformation in materials discovery in areas such as catalyst design, the environmentally minded development of novel and replacement chemicals, and designing for stability in advanced materials.

Frances M. Ross will join the MIT faculty in fall 2018. She performs research on nanostructures using transmission electron microscopes to see, in real time, how nanostructures form and then to observe how the growth process is affected by changes in temperature, environment, and other variables. Understanding materials at such a basic level has remarkable implications for many applications, including semiconductor devices, energy storage, and more. She was educated at the University of Cambridge (BA Hons. and PhD). Most recently was employed as a research scientist at the Nanoscale Materials Analysis Department within IBM’s Thomas J. Watson Research Center in Yorktown Heights, NY. She will hold the Ellen Swallow Richards Professorship.

James M. LeBeau will join the MIT faculty in 2019. Professor LeBeau is currently associate professor of materials science and engineering at North Carolina State University, where his research focus is on developing new transmission electron microscope and scanning transmission electron microscope techniques to determine the atomic structures of materials. These techniques will permit an unprecedented understanding of ceramics, metals, and electronic materials. Professor LeBeau has a BS from Rensselaer Polytechnic Institute and a PhD from the University of California at Santa Barbara; both degrees are in materials science and engineering. He will hold the John Chipman Career Development Chair.

Professor Geoffrey S. D. Beach was named co-director of the Materials Research Laboratory in fall 2017. He will be promoted to full professor effective July 1, 2018. His group studies spin dynamics and spin electronics in nanoscale magnetic materials and devices.

Professor Elsa Olivetti will be promoted to associate professor effective July 1, 2018. She studies how to improve the environmental and economic sustainability of materials in the context of rapidly expanding global demand.

Harry L. Tuller was awarded the Richard P. Simmons Professorship for AY2018.

TDK Professor Michael Rubner retired during the fall semester. He is a renowned polymer scientist, educator, and mentor whose MIT career began as a graduate student in 1982 and continued as a member of the DMSE faculty in 1986. Using layer-by-layer assembly of functional thin films, he has generated real-world applications and fundamental knowledge. His remarkable teaching skills have been recognized with a MacVicar Fellowship, a Bose Teaching Award, the Everett Moore Baker Teaching Award, and a Graduate Student Council Teaching Award, among others. His guidance and concern have benefitted MIT's students, faculty, and staff in many ways—personal, professional, and organizational. As director of the Center for Materials Science and Engineering since 2001, he worked with researchers across MIT and had an integral role in shaping the MIT.nano facility. His leadership brought materials education and research at MIT to their current strong positions.

Ronald Ballinger retired at the beginning of the 2018 spring semester. Professor Ballinger first came to MIT after serving for eight years in the nuclear Navy. He arrived in DMSE as part of a dual master's degree program, pursuing an SM in nuclear engineering (received in 1977) and materials science (received in 1978). Afterward, he remained at MIT to pursue his ScD in nuclear materials engineering. He became an instructor in 1980 and completed his degree in 1982. Professor Ballinger was hired later that year as an associate professor with joint appointments in Nuclear Engineering and DMSE and was promoted to full professor in July 2005. His research specialty is in materials selection and engineering of nuclear systems, as well as the environmental degradation and life assessment of those systems. He became the head of the H. H. Uhlig Corrosion Laboratory on the retirement of Professor Ronald Latanision.

Krystyn Van Vliet, Michael (1949) and Sonja Koerner Professor of Materials Science and Engineering, was named associate provost in September 2017 with oversight of space planning, allocation, and renovations. She also oversees industrial engagement efforts, including the Industrial Liaison Program and the Technology Licensing Office.

Michael Cima, David H. Koch Professor of Engineering, was named co-director of the MIT Innovation Initiative and associate dean of innovation for the School of Engineering.

Professor Carter is serving as the Secretary of the Faculty.

Magdalena Rieb accepted the position of DMSE administrative officer in October 2017. She supervises financial, personnel, facilities, and communications staff, and works closely with department leadership and faculty to advance department goals, serve as

a liaison to the MIT administration, and foster better working relationships within the DMSE community. The financial team is made up of Kariuki Thande as senior financial administrator, Teri Quill as financial administrator, and Johanna Wilcox as financial coordinator. The financial staff is responsible for proposals, establishing awards, compliance, projections, and the departmental budget. Support staff and temporary workers address transactional functions, such as verification of expenses charged to an MIT purchasing card. Human resource functions are handled by the administrative officer, assisted by a senior human resources representative and an administrative assistant. The transition has been remarkably smooth. DMSE faculty members and their support staff and research groups have expressed appreciation for the excellent assistance they are now receiving.

Rachel Kemper will be promoted to communications officer in recognition that her position has evolved.

Meri Treska joined the MIT Quarter Century Club.

Research Highlights

In DMSE, research in fundamental materials science is combined with engineering breakthroughs and applications of new technologies. This past year, Advanced Functional Fabrics of America and the American Institute for Manufacturing Integrated Photonics (AIM Photonics), two of the Manufacturing USA institutes, increased their presence at MIT. David Merchan ’19 was accepted to an Advanced Functional Fabrics of America workshop for MIT undergraduates interested in the design and engineering of products made of fibers, yarns, and textiles. The AIM Photonics Academy led several educational programs in photonics research and development and is planning more.

Although research efforts in cancer and energy continued to see significant advances, DMSE faculty brought new light to some areas in particular. Professor Olivetti and her collaborators applied machine learning to materials research, creating “recipes” to make materials. Professor Beach has demonstrated the ability to make skyrmions at will, a discovery with the potential to revolutionize data storage.

Two DMSE faculty and several alumni are working on two of The Engine’s first class of funded projects. Baseload Renewables’ battery system is based on cheap, readily available, and energy-dense sulfur dissolved in water as the anode, with an equally low-cost cathode; it was developed by a team that includes Kyocera Professor Yet-Ming Chiang and William Woodford PhD ’13. Via Separations is developing graphene oxide membranes for filtration, led by Shreya Dave PhD ’16 and Brent Keller PhD ’16, along with Professor Grossman.

Associate Professor Alfredo Alexander-Katz was awarded a BERN research grant for his project Optimizing Ionic Transport in Polymer Electrolytes. Several DMSE faculty and staff were awarded grants from the MIT Deshpande Center for Technological Innovation. Professor Beach received a grant for his project, Solid-State Color Pixel for E-Paper Displays. James Mason Crafts Professor Angela Belcher received one for her project, Active Structural Batteries. Professor Cima was awarded a grant for his project, Local Drug Delivery for Facilitating Expedited Urinary Stone Passage. Professor Darrell

Irvine received one for his project, Structured Nucleic Acid Nanoparticle Therapeutic Delivery Platform. Research Engineer Ulrich Muecke was given a grant for his project, Digital 3-D Printing of Microparticles. Professors Hosler and Lechtman received a grant from the Abdul Latif Jameel World Water and Food Security Laboratory for their project, Anthropogenic Soils of the Amazon: Origins, Extent, and Implications for Sustainable Tropical Agriculture. Finmeccanica Career Development Professor Julia Ortony received one for her project, Supermolecular Nanostructure Gels for Chelation of Arsenic from Drinking Water.

Thomas B. King Career Development Professor of Metallurgy C. Cem Taşan organized and hosted a full-day workshop, "Sustainability through Alloy Design: Challenges and Opportunities." This is planned as an annual event that will coincide with the Materials Research Society conference in Boston.

Associate Professor Niels Holten-Andersen worked with several undergraduates to develop poster and oral presentations for the Winter 2017Materials Research Society conference. Participating students were Alexandra A. Sourakov '18, Michael D. Kitcher '18, Caspar R. Stinn '18, Ha H. Dang '19, Matthew M. Dodaro '20, and Emma K. Vargo '18.

Awards and Honors

Associate Professor Polina Anikeeva was awarded a Vilcek Prize for Creative Promise in Biomedical Science. This $50,000 prize is awarded annually by the Vilcek Foundation in recognition of immigrants who have demonstrated exceptional promise early in their careers. The Vilcek Foundation recognized her for "fashioning ingenious solutions to long-standing challenges in biomedical engineering," including the design of therapeutic devices for conditions such as Parkinson's disease and spinal cord injury.

Professor Beach was invited to serve as a mentor in Oakland University's Pi Academy.

Professor Belcher and W. M. Keck Professor of Energy Yang Shao-Horn were elected to the National Academy of Engineering.

Professor Belcher was a finalist for the second annual Xconomy Boston Awards for Innovation at the Intersection. These awards celebrate the people, companies, and organizations that make the Boston life sciences ecosystem one of the most vibrant and innovative in the world.

Professor Carter received the American Ceramic Society Education and Professional Development Outstanding Educator Award.

Professor Hosler was elected a fellow of the American Association for the Advancement of Science in recognition of her distinguished contributions to the integration of materials science and social theory. Her work lies in understanding ancient technologies and what they indicate about social aspects of those ancient societies.

Thomas Lord Assistant Professor of Materials Science and Engineering Jennifer L. M. Rupp won the 2017 Science Award Electrochemistry from Volkswagen and Baden Aniline and Soda Factory (BASF).

Danae and Vasilis Salapatas Professor of Metallurgy Christopher Schuh was awarded the *Journal of Materials Research* 2017 Paper of the Year for his paper "Phase Transitions in Stable Nanocrystalline Alloys."

Professor Shao-Horn received the Faraday Medal from the Royal Society of Chemistry Electrochemistry Interest Group.

Professor Taşan received the Office of Naval Research's Young Investigator Award for his project, Tracking Hydrogen: A Multi-Scale Experimental-Computational Study of Hydrogen Influence on Dislocations, Plasticity, Damage.

Associate Professor Bilge Yildiz was the winner of the American Ceramic Society's Ross Coffin Purdy Award for her paper "Improved Chemical and Electrochemical Stability of Perovskite Oxides with Less Reducible Cations at the Surface". The paper was published in *Nature Materials*.

Battelle Energy Alliance Professor Ju Li and Professor Tuller both received an MIT Committed to Caring Award. The award honors professors who build inclusive cultures in their laboratories and classrooms, who support their students' mental and emotional health, and who actively support their students' scholarly pursuits.

Professor Alexander-Katz received the Graduate Materials Council Best Advisor Award for his dedication to mentorship and his investment in all of his students in and out of the classroom.

Professor Niels Holten-Andersen received the Graduate Materials Council Best Teacher Award for his unparalleled approachability and enthusiasm during his classes.

Undergraduate Awards

Caitlin McCandler '19 earned Academic All-Patriot League accolades by maintaining a perfect grade-point average (GPA) while rowing in the Women's Rowing Academic All-League.

Emma Vargo '18 was the recipient of the School of Engineering Henry Ford Award for showing exceptional potential for leadership in the profession of engineering and in society.

Amelia Paine '18 and Emma Vargo '18 were invited by the Xi Chapter to become members of Phi Beta Kappa.

Alexander Denmark '19 received the Julian Szekely Award for Outstanding Junior for his intelligence, respect, creativity, and dedication to his education and research.

Ximena Hasbach '19 and Emma Vargo each received an undergraduate teaching award for their thoughtful and dedicated contributions to the DMSE community through teaching. Hasbach received the award for being an instrumental teaching assistant in 3.091 Introduction to Solid State Chemistry. Vargo received the award for her role as a teaching assistant in 3.016 Mathematics for Materials Science and Engineers, her support of the Associate Advisors Program, and for bringing 3.024 Electronic, Optical and Magnetic Properties of Materials to the edX platform.

Erick Hernandez ’18 won the Horace A. Lubin Award for DMSE Community Service for being an enthusiastic member of the DMSE community. He was a teaching assistant, undergraduate researcher, undergraduate associate advisor, First-Year Pre-Orientation Programs mentor and coordinator, and president of the Society of Undergraduate Materials Scientists.

Lisa Kong ’18 won the Outstanding Senior Thesis Award for “High-Resolution Transmission Electron Microscopy of III-V FinFETs.” Her thesis advisor was Jesús del Alamo.

Pooja Reddy ’20 won the Outstanding Sophomore Award for her academic excellence, unusual talent as a researcher, resilience and work ethic, patience, and infectious excitement.

Katheryn Scott ’18 was the recipient of the Joseph M. Dhosi Outstanding Internship Award. During her internship at the Ashmolean Museum, University of Oxford, she studied the transfer of chalk from paper to polymer window materials used in mountings for fine art in storage. This was original research with no previously collected data. She was also selected as a Schwarzman Scholar and will begin postgraduate studies at Tsinghua University in Beijing, China, next fall.

Emma Vargo received the outstanding senior award for maintaining a high GPA while continuing to demonstrate dedication to DMSE through her leadership position in the Society of Undergraduate Materials Scientists and strong advocacy for first-year recruiting.

Graduate Awards

Many DMSE students received external fellowships this past year. Agencies and organizations awarding fellowships included the National Science Foundation, the Kwanjeong Educational Foundation, the Robert and Patricia Switzer Foundation, the National Defense Science and Engineering Graduate fellowship, Agency for Science, Technology and Research scholarship, Blue Waters Graduate Fellowship, Samsung scholarship, and others.

Gregory Ekchian received MIT’s Patrick J. McGovern ’59 Entrepreneurship Award.

Sarah Goodman, Graduate Student Council president, and her fellow officers received MIT’s Karl Taylor Compton Prize.

Olivia Hentz of the Gradečak Group (Laboratory for Nanophotonics and Electronics) conducted a groundbreaking study of the degradation mechanisms of organic-inorganic Perovskite solar cells. She was selected to give the spring 2018 Microsystems Technology Laboratories doctoral dissertation seminar.

Alvin Tan was a part of a team named Fiat Flux that won a $10,000 MIT Clean Energy Prize for developing a special membrane system that uses the power of light to clean itself. The team’s light-based technology continuously cleans organic contaminants off seawater reverse-osmosis filters; upon exposure to ultraviolet light, any particles that have built up on the coating disintegrate, cleaning the membrane.

At DMSE's Commencement awards presentation, Qiyang Lu received the Best PhD Thesis Award for his thesis, "Controlling Properties of Functional Oxides by Tuning Oxygen Defect Chemistry." His thesis advisor was Professor Yildiz.

Aleksandar Mijalovic won the Graduate Student Teaching Award in Teaching a Graduate Subject for his work as the spring 2017 and 2018 teaching assistant in 3.22 Mechanical Behavior of Materials. His ability to explain and simplify difficult concepts both in recitation and in one-on-one scenarios was greatly appreciated by his students. Students also said that his engagement during class demonstrations gave physical meaning to otherwise abstract concepts.

Jérôme Michon won the John Wulff Award for Excellence in Teaching an Undergraduate Subject for his work in 3.091 Introduction to Solid State Chemistry for three semesters, during two of which he served as head teaching assistant/instructor. He was commended for his willingness and ability to take on leadership roles and his part in creating the "goodie bags" used throughout the subject.

Hugo Uvegi received the Graduate Student Community Service Award for his participation in the Graduate Materials Council as the social chair, president, and alumni chair, and also for being involved in the MIT Waste Alliance as an event coordinator.

Yen-Ting Chi, co-advised by Professors Van Vliet and Yildiz, was the recipient of the Best Paper Award for a First- or Second-Year Student for his paper "Accessible Switching of Electronic Defect Type in $SrTiO_3$ via Biaxial Strain," which was accepted for publication by *Physical Review Materials*.

Shaolou Wei in the Taşan Group won the Exceptional First-Year Performance Award for the remarkable progress he has achieved during his graduate career so far.

The MIT and Dow Materials Engineering Contest has continued to be a success in DMSE, bringing students an opportunity to pursue their ideas in sustainability while learning about prototyping, teamwork, and design. Cynthia Lo '18, Jaz Harris '18, and William Robin Lindemann G of team A Salt Solution won the $10,000 first-place prize. They developed an inexpensive hydrogel that can extract uranium from water to provide more fuel for nuclear power plants. For the first time in the contest's history, two teams tied for second place and split the combined second- and third-place winnings of $5,000 each. Team DUMBLEDORE, consisting of Leonardo Zornberg G, Skylar Deckoff-Jones G, and Joshua Kubiak G, developed an automated wrinkling-and-unwrinkling coating for ships that staves off bacteria and other organisms more efficiently and with less pollution than other methods. Team Geoworks, consisting of Hugo Uvegi G, Stephen Filippone G, Ethan Rosenberg G, and Astera Tang G, developed porous bricks made of geopolymers (minerals that are mixed and gel together to form solid materials) that can insulate buildings at lower cost and with greater efficiency than traditional insulating materials.

Staff Awards

Lecturer Kyle Keane won the 2018 James N. Murphy Award for his outstanding contributions to MIT through teaching and mentoring excellence, and for inspired and dedicated service to students. He delivers a rigorous project-based curriculum where he consciously employs positive education techniques to create a kinder, bolder, and more effective learning experience.

Rachel Kemper, Communications Coordinator, received the 2018 School of Engineering Ellen J. Mandigo Award for Outstanding Service.

Kyle Keane and DMSE Facilities Manager Adam Shervanian, received 2018 School of Engineering Infinite Mile Awards for exceptional service and support. Laura von Bosau, administrative assistant to Professor Grossman, received a 2018 Infinite Mile Award from the Research Laboratory of Electronics in recognition of her dedication and exemplary effort in supporting 3.091 Introduction to Solid State Chemistry.

Future Plans

Over the past few years, the Department of Materials Science and Engineering has made careful and strategic decisions that have placed the department in a strong and exciting position to face the future. With the faculty additions of Frances Ross and James LeBeau, DMSE's research capabilities are broader; the MIT.nano facility will offer new opportunities for collaboration; and the department's educational programs, both on- and off campus, are growing and dynamic.

Christopher A. Schuh
Department Head
Danae and Vasilis Salapatas Professor of Materials Science and Engineering