Program in Polymers and Soft Matter

The interdepartmental Program in Polymers and Soft Matter (PPSM), established in 1986, offers graduate education in the interdisciplinary field of polymer science and engineering. Its goals are to provide educational opportunities and foster a collaborative, communal spirit among the large and widespread group of students, faculty, and visitors involved in polymer-related activities at MIT. PPSM provides a core graduate polymer curriculum; written and oral doctoral qualifying examinations; seminars presented by prominent visitors from industry, government agencies, and academia; and special student-driven events. The program is administered voluntarily by faculty from the Departments of Materials Science and Engineering (DSME), Chemical Engineering (ChemE), Mechanical Engineering (MechE), Biological Engineering (BioEng), and Chemistry.

In AY2015, PPSM enjoyed continued growth and vitality. The fifth annual MIT Polymer Day event was produced by the PPSM Graduate Student Association on March 11, with unprecedented corporate support and participation from returning sponsors Cabot Corporation, Cambridge Polymer Group, Inc., and three new sponsors: SABIC, NeoGraft Technologies, and Sigma-Aldrich. For the first time, our poster session featured researchers from other universities, including Harvard, Tufts, UMass Amherst, UMass Lowell, and Northeastern. With 44 entrants, two corporate information booths, and more than 150 attendees, the session was a decisive success. Following the poster session, four seminars were presented, by MIT postdoc Julia A. Kalow and graduate students Michelle K. Sing, Justin A. Kleingartner, and Shengchang Tang. In fall 2014, PPSM welcomed five new students—two through DMSE, two through Chemistry, and one through BioEng—and graduated one student through DMSE. PPSM's faculty roster held steady at 20 this year. In addition, the program will welcome seven new students in fall 2015, with one or more students representing each of our five participating departments. Our pool of incoming students and vigorous faculty participation continue to affirm ongoing broad-based support from PPSM's affiliated departments.

Notable are the following significant faculty accomplishments for AY2015. Alfredo Alexander-Katz (DMSE), Walter Henry Gale Associate Professor of Materials Science and Engineering, was awarded tenure. His research combines theory and simulations to develop a deep understanding of soft materials systems. Daniel Blankschtein (ChemE), Herman P. Meissner (1929) Professor in Chemical Engineering, was, for the ninth time, selected by ChemE graduate students to receive the department's Outstanding Teaching Award in May 2015. Raymond A. (1921) and Helen E. St. Laurent Professor of Chemical Engineering Robert E. Cohen (ChemE) was named a fellow of the American Academy of Arts and Sciences in spring 2015.

Alexander and I. Michael Kasser (1960) Professor Karen K. Gleason (ChemE) was elected to the National Academy of Engineering and received the American Institute of Chemical Engineers (AIChE) Charles M.A. Stine Award and the 2015 International Union of Pure and Applied Chemistry Distinguished Women in Chemical Engineering Award. Paula T. Hammond (ChemE), David H. Koch (1962) Professor in Engineering, received the 2014 AIChE Alpha Chi Sigma Award for Chemical Engineering Research in November; this award recognizes outstanding accomplishments in fundamental or

applied chemical engineering research. In July 2015, Professor Hammond was appointed head of MIT's Department of Chemical Engineering. Professor of Materials Science and Engineering and Biological Engineering Darrell J. Irvine (DMSE/BioEng), the current director of PPSM, was named a fellow of the American Institute for Medical and Biological Engineering for his outstanding contributions to immune engineering.

Firmenich Career Development Assistant Professor received the National Science Foundation's most prestigious junior faculty honor, the Early Career Development Award. David H. Koch Institute Professor Robert S. Langer (ChemE/BioEng) was awarded the Queen Elizabeth Prize for Engineering, the Kyoto Prize for Technology, and the Scheele Award, among numerous other honors. Paul M. Cook Career Development Assistant Professor Bradley D. Olsen (ChemE) was awarded a 2015 Camille Dreyfus Teacher-Scholar Award and a DuPont Young Investigator Award and was named one of Chemical and Engineering News magazine's "Talented 12."

Katharina Ribbeck (BioEng), Eugene Bell Career Development Professor of Tissue Engineering, was selected in October 2014 as one of Popular Science magazine's "Brilliant Ten" for her discoveries about the sophisticated filtering role of mucus in the human body, and the body's ability to build gels with different characteristics to perform different filtering functions. John D. MacArthur Professor Timothy M. Swager (Chemistry) was awarded the Alexander von Humboldt Foundation Award in recognition of his achievements to date and for fundamental new insights anticipated to have a continued cutting-edge impact. Associate Professor Xuanhe Zhao (MechE) was appointed associate editor-in-chief of Acta Mechanica Sinica.

With pride, PPSM also notes the selection of recent alum Charles E. Sing PhD '12 as one of Forbes magazine's "30 Under 30 in Science" for 2015. Sing is currently an assistant professor in the department of chemical and biomolecular engineering at the University of Illinois. Sing uses computational and theoretical tools to study the physics of polymers, to investigate how scientists might make new chemicals in silico, so that they can be designed, not just created through trial and error.

The 2014–2015 seminar series featured leading polymer faculty from a number of US and overseas universities and attracted an audience of 50 to 80 per seminar, including students, faculty, and non-MIT attendees. Professor Johnson and Assistant Professor Niels Holten-Andersen (DMSE) administer the PPSM seminars. In spring 2015, discussions with Sigma-Aldrich yielded the groundwork for PPSM's first sponsored lectureship, which will commence with a September 2015 seminar to be given by a distinguished authority in the field.

Through continued academic rigor, development of community resources, and cultivation of our corporate partnerships, PPSM anticipates an exciting and successful year ahead.

Darrell J. Irvine
Director
Professor of Materials Science and Engineering and Biological Engineering
Investigator, Howard Hughes Medical Institute