Program in Polymers and Soft Matter

The interdepartmental Program in Polymers and Soft Matter (PPSM), established in 1986, offers graduate and undergraduate education in the interdisciplinary field of polymer and soft-matter science and engineering. Its goals are to provide educational opportunities for and foster a collaborative communal spirit among, the large and widespread group of students, faculty, and visitors involved in polymer and soft matter–related activities at MIT. PPSM provides a core graduate polymer science and engineering 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 has recently added a polymer minor for undergraduates that has been well accepted. The program is academically administered by faculty from the Departments of Materials Science and Engineering, Chemical Engineering, Mechanical Engineering, Biological Engineering, and Chemistry.

MIT Polymer Day

On April 17, 2019, the ninth annual MIT Polymer Day event was held. The event was produced, as before, by the PPSM Graduate Student Association and fully underwritten by returning sponsors Cabot Corporation, Cambridge Polymer Group, Inc., Exponent, and Arkema S.A., and two new sponsors: Dow Chemical Company and Tesa SE. For the fifth consecutive year, poster presenters from several other universities were welcome; this year, they came from the University of Massachusetts, Amherst, Rensselaer Polytechnic Institute, and Boston University. With 43 posters, three corporate information booths, and more than 150 attendees, this year's poster contest was a substantial success. After the poster session, three short seminars covering a range of topics were presented by PPSM graduate students Erica L. Lai and Seth A. Cazzell and 2019 PPSM/Chemistry PhD graduate Yuan He.

For the third year, the day included a discussion panel consisting of two prominent PPSM alumnae, Ayse Asatekin '09 and Charlotte R. Stewart-Sloan '16, Department of Bioengineering alumnus Wesley G. Chen '17, and Chemical Engineering alumnus Justin A. Kleingartner '15. They shared stories from their careers and counseled current MIT polymer students and postdoctoral associates.

Personnel

Academic year 2019 was another year of progress for PPSM. In fall 2018, PPSM welcomed a record group of 13 new students, eight through the Department of Materials Science and Engineering, four through the Department of Chemical Engineering, and one through the Department of Chemistry. The program graduated four students, one through the Department of Biological Engineering and three through the Department of Chemistry. The program currently has approximately 40 graduate students from all the departments participating in the program.

PPSM's faculty roster has 23 active members. They are thoroughly engaged with MIT's thriving, diverse ecosystem of interdisciplinary polymer research, reflecting the program's continued broad-based support.

Below are a few notable faculty milestones and awards from the past year:

- Associate Professor Alfredo Alexander-Katz received the Frank E. Perkins Award for Excellence in Graduate Advising for his service as an advisor and mentor to graduate students.
- Professor Paula T. Hammond was elected to the National Academy of Sciences, making her one of a very small group of people who are members of all three National Academies – Sciences, Engineering, and Medicine. She joins Chemical Engineering faculty members Arup K. Chakraborty and Robert S. Langer in that distinction.
- Assistant Professor Robert J. Macfarlane was awarded the Paul M. Cook Career Development Professorship, which recognizes a junior faculty member with a strong interest in the materials and chemical sciences.
- Associate Professor Bradley D. Olsen was on sabbatical from MIT, working as a visiting professor at the State University of Campinas in Campinas, Brazil. During this time, Olsen won the Young Investigator award from the State Key Laboratory of the Molecular Engineering of Polymers in Shanghai, China.
- Assistant Professor Julia H. Ortony won the Professor Amar G. Bose Research Grant. This grant program provides funding over a three-year period to MIT faculty who explore areas that other researchers ignore.
- Assistant Professor Zachary P. Smith is a recipient of the US Department of Energy Early Career Award, the American Chemical Society Petroleum Research Fund Doctoral New Investigator Award, and the North American Membrane Society Young Membrane Scientist Award.

Seminar Series

In academic year 2019, the PPSM seminar series continued to bring leading polymer researchers from US and overseas universities to MIT. The series attracted an audience of 50 to 80 students, faculty, and non-MIT attendees to each seminar. The program is grateful to Professors Robert J. Macfarlane and Niels Holten-Andersen, Department of Materials Science and Engineering, who have continued to administer the PPSM seminars.

Growing Legacy of Leadership

Academic year 2019 was PPSM's 32nd year of addressing tomorrow's engineering challenges through its doctoral course of study, fostering a diverse campus-wide community of polymer researchers, and producing the popular PPSM Polymer Seminar series.

The program's legacy—its many graduates' wide-ranging success, and the preparation of today's young MIT researchers for leadership roles in polymer engineering and related disciplines—reflect PPSM's dynamic, enduring values. PPSM alumni serve on the faculty at universities, including Harvard University, Stanford University, and MIT; are cutting-edge researchers at industrial leaders such as DuPont de Nemours, Inc., Millennium Pharmaceuticals, Inc., and Boston Scientific Corporation; are entrepreneurial

trailblazers in the development of innovative business opportunities; and are explorers stretching the bounds of human knowledge at NASA, the National Institutes of Health, and other government and military agencies in the US and abroad.

Thanks to engagement and support from the faculty of the program's five affiliated departments, lively corporate interest, and a proactive student organization, PPSM advances into the coming year stronger than ever. PPSM looks forward to furthering polymer education excellence and cultivating MIT's expanding influence in the global community of polymer innovators.

Alfredo Alexander-Katz
Director
Professor of Materials Science and Engineering