HAJIM SCHOOL OF ENGINEERING & APPLIED SCIENCES
UNIVERSITY of ROCHESTER

Department of Chemical Engineering

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DESIGNER BIOINTERFACES:
BRIDGING THE GAP BETWEEN MAN-MADE MATERIALS AND BIOLOGICAL SYSTEMS

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3:25 p.m.
202 Gavett Hall

Our improved understanding of molecular biology, microfabrication, and materials chemistry has stimulated cross-fertilization of two fields that had little overlap even a few decades ago: biology and materials engineering. In my presentation, I will discuss current advances in the design of multifunctional materials and biointerfaces including three distinct examples under research in the Lahann group: (i) The development of novel synthesis concepts for functional polymers. (ii) Biphasic particles that exhibit a wide range of sizes, shapes and compartmentalization have been prepared using electrified co-jetting. The individual phases can be independently loaded with different biomolecules or selectively surface-modified. Appropriate design of compartment materials and particle loadings can render biphasic particles to be stimulus-responsive. (iii) Reactive coatings with one or multiple advanced functions can be synthesized by chemical vapor deposition (CVD) polymerization as well as CVD co-polymerization.