CHEMICAL ENGINEERING

SEMINAR SERIES

KAREN K. GLEASON

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Associate Provost
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Synthesizing Polymers from Monomer Vapors for Organic Surfaces and Devices

ABSTRACT: Chemical vapor deposition (CVD), as practiced by the semiconductor industry, typically utilizes high powers and high temperatures to drive non-selective chemistry. These aggressive conditions are incompatible with reactants possessing fragile organic functional groups. However, utilizing selective chemistry and judicious choice of reactants allows deposition rates of CVD organic films to be high, even when energy input is low. The CVD method is ideally suited for insoluble and infusible materials such as fluoropolymers, crosslinked organic networks, and conjugated semiconducting and conducting polymers. To date, a portfolio of >70 CVD homopolymers and copolymers have been demonstrated. The conformal nature of CVD polymerization enables the facile integration of organic thin films into device prototypes from resistive biosensors fabricated directly onto a high surface area electrospun mats to lightweight, flexible, and foldable photovoltaic arrays "vapor printed" directly on ordinary paper substrates.

BIOGRAPHY: Karen K. Gleason is the Associate Provost and Alexander and I. Michael Kasser Professor of Chemical Engineering at MIT. She is a member of the National Academy of Engineering and a fellow of the American Institute of Chemical Engineering (AIChE). Her Ph.D. is from the University of California at Berkeley and her B.S. and M.S. degrees are from MIT. She has authored 300 publications and holds 20 issued US Patents. Gleason is also a co-founder of GVD Corporation and DropWise Technology Corporation.

RECEPTION 3:30 • LECTURE 4:00 – 5:00
PHYSICS ASTRONOMY BLDG. (PAA) A110

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