

Etter Memorial Lecture

9:45 a.m. Thursday, May 2, 2013 • 331 Smith Hall

Targeted and Cloaked Multifunctional Nanoparticles for Bioanalysis, Biomedical Imaging, Therapy and Surgery

Abstract

Multifunctional nano-carriers enabled a major route for the achievement of theranostics, i.e., simultaneous therapy and diagnostics, where the later can be broadly defined as covering structural (physical) and functional (chemical) imaging, surgery assisting delineation and monitoring of therapy. The mode of therapy can be chemical (e.g. drugs), physical (e.g. radiation), or a combination (e.g. photochemical). Drug targeting, to specific organs, cells, organelles, or cell biomolecules, has been the dream of the biomedical community for a century (Ehrlich's silver bullet); it has been transformed into reality only recently, largely with the use of nano-drugs. A nanoparticle based platform can include drugs, drug sensitizers, imaging contrast agents, targeting moieties, "cloaking agents" and more. This recent development of nanoplateforms has made possible such combinations of therapeutic functions as well as better designed biodegradation and bioelimination. Application examples include brain cancer imaging, surgical delineation and photodynamic therapy (PDT), ovarian cancer chemotherapy as well as targeted PDT of arrhythmia causing cardiac cells.

Margaret C. Etter Memorial Lecture in Materials Chemistry

Margaret "Peggy" Cairns Etter was born on September 12, 1943. She died on June 10, 1992, from cancer. In 1974, she received her doctorate in chemistry from the University of Minnesota under the direction of Jack Gougoutas. She taught organic chemistry at Augsburg College in 1975-76, and worked at the 3M Company from 1976 to 1983. She returned to the University of Minnesota as a postdoctoral fellow with Robert Bryant in 1984 and, within a year, had secured an independent academic appointment. Peggy rose rapidly through the ranks and in 1990 was promoted to full professor. Peggy's outstanding characteristics as a scientist were her infectious enthusiasm, uncompromising scientific standards, and creativity. Her research group made major contributions in the applications of solid-state nuclear magnetic resonance spectroscopy, the design and properties of organic non-linear optical materials, and most significantly, in the understanding and utilization of hydrogen-bonding interactions in crystals. This was reflected in nearly 80 research papers and in several landmark review articles in prestigious journals. Outside recognition in the form of fellowships from the Sloan and Bush Foundations and an Iota Sigma Pi Award for Excellence in Chemistry represent incomplete reflections of the impact of this work. One of her extramural "side projects" was to found a company called "Rochelle Crystal Corporation," for which Peggy was named St. Paul Businessperson of the Year in 1986.



Professor

Raoul Kopelman

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Research interests range from the theoretical, such as stochastic formalisms and supercomputer simulations related to the patterns of reaction fronts in capillaries, to the applied such as the development of biochemical nano-sensors, energy transducer supermolecules (artificial photosynthetic antenna), and in-vivo chemical measurements in brain cells

Website: <https://www.chem.lsa.umich.edu/chem/faculty/faculty-Detail.php?Uniqname=kopelman>

**Host: Professor
Christy Haynes
Refreshments
will be served prior
to the seminar.**