SEMINAR

Friday, November 16, 2007
3:00 pm / Refreshments at 2:45 pm
Life Science Building – Rathmann Auditorium

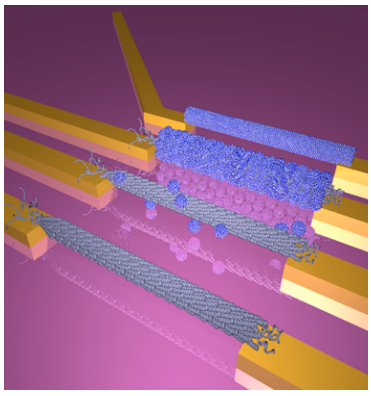
Angela Belcher

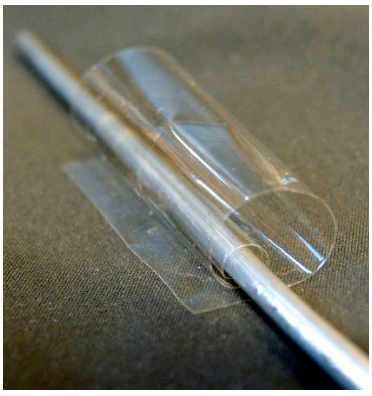
Germeshausen Professor of Materials Science and Engineering and Biological Engineering, MIT

"From Nature and back again…. Giving new life to materials for energy, electronics, the environment and medicine"

The Molecular, Cellular, and Developmental Biology Department; the Interdepartmental Graduate Program in Biomolecular Science and Engineering; and the Institute for Collaborative Biotechnologies are honored to present a seminar by Angela Belcher. Professor Belcher is an alumna of UCSB, with a B.S. in biology from the College of Creative Studies, and a Ph.D. in chemistry. In June 2006, the UCSB Alumni Association presented her with a Distinguished Achievement Award.

Professor Belcher serves as the MIT coordinator for the ICB. Her research uses nature as a guide in making novel materials for electronics and energy and brings together the fields of inorganic chemistry, materials chemistry, biochemistry, molecular biology and electrical engineering. She was named "Research Leader of the Year" by Scientific American in 2006 for "the use of custom-evolved viruses to advance nanotechnology." She has received many national awards, including a prestigious MacArthur Foundation "genius" fellowship for her extraordinary work in bionanotechnology.





ABSTRACT: Organisms have been making exquisite inorganic materials for over 500 million years. Although these materials have many desired physical properties such as strength, regularity, and environmentally benign processing, the types of materials that organisms have evolved to work with are limited. However, there are many properties of living systems that potentially could be harnessed by researchers to make advanced materials for technologies that are smarter, more adaptable, and that are synthesized to be compatible with the environment. One approach to designing future technologies which have some of the properties that living organisms use so well, is to evolve organisms to work with a more diverse set of building blocks. These materials could be designed to address many scientific and technological problems in electronics, military, medicine, and energy applications. An example is a virus enabled lithium ion rechargeable battery we recently built that has many improved properties over conventional batteries. This talk will address conditions under which organism first evolved to make materials and scientific approaches to move beyond naturally evolved materials to genetically imprint advanced technologies.