

UNIVERSITY OF CONNECTICUT



**INSTITUTE OF MATERIALS SCIENCE**

POLYMER PROGRAM SEMINAR

**“Biodegradable Nanocomposites for Medical Applications”**

**Prof. Patrick T. Mather  
Syracuse University**

**Friday, February 27, 2009  
11 AM, IMS Room 20**

The need exists for resorbable medical devices that combine mechanical integrity and controlled drug delivery with tailored degradation characteristics. While standard biodegradable polymer compositions have frequently led to unwanted compromise in one or more of the targeted characteristics, polymeric nanocomposites offer the potential to achieve multiple targets but not without design challenges. This talk will present several “bottom-up” approaches toward the development of biodegradable nanocomposites incorporating polyhedral oligomeric silsesquioxane (POSS) for medical applications. First, I will present the synthetic strategies used to incorporate POSS into a variety of controlled-architecture polymer formats, both degradable and non-degradable, included telechelic, block, multiblock, and inverse telechelic networks. The structure-property relationships developed for such POSS architectures will be elaborated, with an emphasis on the design rules learned. Then the talk will focus on two particular biodegradable POSS systems and their “stories”: (1) POSS thermoplastic polyurethanes (TPUs) for controlled drug delivery coatings, and (2) Shape memory and biodegradable POSS networks prepared by photocrosslinking.

*\*Coffee will be served at 10:45AM outside the seminar room.*

*\*For further information, please contact YH Chudy at 860.486.3582 of [yhchudy@ims.uconn.edu](mailto:yhchudy@ims.uconn.edu)*