Natural Polymers Class Syllabus Spring 2007

Dr. Caroline L. Schauer
Office: CAT 179 until May then Lebow 439A
Phone: 895-6797
Email: cschauer@cbis.ece.drexel.edu

This course provides an introduction to natural and biomimetic polymers with an interdisciplinary view of biology, chemistry and macromolecular science. Topics covered in this course include: natural building blocks and methods by which nature carries out polymer synthesis and modification reactions; DNA; structural proteins; plant proteins; polysaccharides; and a wide variety of renewable resources; uses of these polymers as fibers, films, rheological modifiers, flocculants, foams, adhesives and membranes; special applications of natural polymers in medicine, materials, and sensing.

Grading:

Three homework assignments scattered through out the term — 30%
Ten page literature review paper 5/9 by 5 pm --50%
Final exam during exam week of 6/11-6/15 — 20%

Class: 6-9 pm Wednesday
There will be no class 05/16 or 05/23 as I will be out of the office. These classes will be recorded by me and put on the web. You will be responsible for listening to the recordings.

Readings posted on Blog

Section 1. polypeptides week 1-3
Readings from Amino Acids and Peptides by Barrett and Elmore
Types of biopolymers: Proteins, polylysine, polycysteine, enzymes, anitbodies
How they are used: Protein surfaces, immunosensing, metal ion remuneration

Section 2. Poly(Nucleic Acids) week 4-6
Types of Biopolymers: DNA, RNA
How they are used: Gene chips, architectures

Section 3. Polysaccharides weeks 7-10
Types of biopolymers: Chitosan/chitin, cellulose, chondroitin, k-carrageen, agarose, alginate, agar, gelatin, Heparin, Hyaluronan, Dermatin Sulfate, Keratan sulfate
How they are used: Fibers, films, adhesives and membranes gelling agents, metal ion remuneration