CHEMISTRY 4272 - Section 2993 – TWO CREDIT COURSE
Spring Semester 2013
Monday and Wednesday, Period 7 – Leigh Hall Room 207

THE ORGANIC CHEMISTRY OF HIGH POLYMERS

or

"Vignettes in Polymer Chemistry"

Every aspect of your life is influenced by polymers. You use them from morning to evening. They are used extensively in medicine. You know them by common, generic, object and trade names such as Teflon, Vinyl, PVC, plastics, elastomers, resins, epoxies, polyurethanes, polyester, nylon, plexiglass, lycra, spandex, rayon, coke bottles, frisbees, footballs, tires, shampoo, wood, carpet, silk, paper, etc. The list literally is endless.

What you don't know is the chemistry used to form these polymers. We are going to change that by discussing the fundamentals of synthetic polymer chemistry. No previous course in polymer chemistry is required. A knowledge of sophomore organic chemistry is assumed.

Material in this two-credit course will include basic concepts, synthesis, propagation mechanisms, (limited) kinetics, and characterization techniques. The reference for the course is **Polymer Chemistry: An Introduction** by Malcolm P. Stevens, 3rd Edition, Oxford University Press, 1999. We will update this text with new information, but the basic info given in this text is very good.

We will cover the material on a step-by-step basis. The course game plan looks as follows:

Vignette	Description	Relevant Chapter
1	Polymer Concepts	1
2	Molecular Weight Analysis	2
3	Chemical Structure & Polymer Morphology	3
4	Radical Chain Growth Polymerization	6
5	Ionic Chain Growth Polymerization	7
6	Stereochemical Analysis in Polymers	Various
7	Coordination Chain Growth Polymerization	8
8	Step Growth Polymerization	10
9	Ring Opening Polymerization	10 &16
10	Copolymerization	Various
11	Living Polymerization	Various
12	Polyesters and Polyamides	12 & 13

We meet twice a week (Mondays & Wednesdays, 7th period, Leigh Hall 207. The material you will be tested on will be taken both from the text and from class lectures. Homework will not be graded, but I am willing look over any of your homework problems if you like.

A midterm and a final will be given, each of equal value. Office hours will be held on Wednesdays from 3PM to 5PM, or by appointment. Good luck with this course!

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