

CHEMISTRY 4272 - Section 2993 – 2 CREDIT COURSE Class # 11105
Spring Semester 2019
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. And remember, this is a chemistry class, not a materials science class.

Material in this two-credit course will include basic concepts, synthesis, propagation mechanisms, and (limited) kinetics. The reference for the course is **Polymer Chemistry: An Introduction** by Malcolm P. Stevens, 3rd Edition, Oxford University Press, 1999. Consider the book a reference; we will make extensive use of the internet

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

<u>Vignette</u>	<u>Description</u>	<u>Relevant Chapter</u>
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	Controlled Radical 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 from class lectures and your assignments only.** Attendance in class is therefore a must if you wish to try for a good grade.

Two tests will be given, each of equal value. Office hours will be held on Mondays from 4PM to 5:30 in Leigh Hall Room 328 or by appointment. Good luck with this course!

K B Wagener
Wagener@chem.ufl.edu