INTRODUCTION TO POLYMER SCIENCE

CH and CM-4610, 2004 Fall

Dr John G. Williams Room 620C

Office Hours

Usually 2-4 M, W, F but preferably by arrangement. Contact me by email most reliably -jgwillia or, less likely, by campus phone -X2491

Course Notes for CH/CM 461

Course Text: "Polymer Science and Technology" by Joel R. Fried, Prentice Hall, 2nd Edition

There will be weekly tests and two class exams during the semester (about 5th and 10th week) and a final exam. Marks will be allocated to the weekly take home tests (given out on Fridays and due back the following Monday) (30), the mid-semester exams (20 each), the final exam (20), for a polymer sample (5) and for handing in homework (5). Grades will be allocated such that approximately 50% of the class will receive an A, AB or B grade. Hence a below average score will contribute to a BC or lower grade.

Students will be expected to become familiar with common plastics throughout the course through interactive discussion of plastic materials bought to class on Fridays.

Make-up Policy

Students who expect to miss class tests or exams should advise me before the test and I will arrange an alternate test at a suitable time within one week of the missed test if warranted. Under special circumstances, including serious illness, a make-up will be allowed if no prior warning was possible. All students are expected to sit the final exam even if a graduating senior.
Course Synopsis CH/CM-4610

Week 1: Basic concepts, fundamental terms, mechanical properties
  Constitution, molecular structure, copolymers; Spectroscopy
  Fried Chapter 1

Week 2: Polymer Synthesis
  Fried Chapter 2

Week 3-4: Common plastics and their uses
  Fried Chapter 9 and 10

Week 5: Conformation, solutions and molecular weight
  Fried Chapter 3

Week 6-7: Solid-state properties
  Fried Chapter 4

Week 8-9: Viscoelasticity and rubber elasticity
  Fried Chapter 5

Weeks 10: Degradation and recycling of plastics
  Fried Chapter 6

Week 11-12: Rheology and processing
  Fried Chapter 11

Week 13: Additives, blends and composites
  Fried Chapter 12

Week 14: Other polymer applications.
  Fibers, adhesives, and coatings, Review