

MS/ME 504 Polymers and Soft Materials

T/Th 12-2pm, Fall 2010

Professor Catherine Klapperich, catherin@bu.edu

Office Hours T 2-4pm, Room 725 ERB

Courseinfo Website MS 504

Textbook: required Rubenstein and Colby, *Polymer Physics* (2003)

Grading: Homework 15%, Participation/Attendance 15%, Midterms 30% each, Final 40%

Lecture	Date	Topic	Reading
1	Th 2 Sept	Intro to Course/Overview of Polymers	R&C 1.0-1.6
2	Tu 7 Sept	Polymerization, crosslinking, basic chemistry	
3	Th 9 Sept	Molecular weight calculations	
4	Tu 14 Sept	Crystallinity, glass transition temperature	
5	Th 16 Sept	Ideal chains, random walk	R&C 2.1, 2.2
6	Tu 21 Sept	No class	
7	Th 23 Sept	Ideal chains, freely rotating chain model	R&C 2.3.1, 2.4, 2.5
8	Tu 28 Sept	Real chains	R&C 3.1, 3.2.1
9	Th 30 Sept	Dilute polymer solutions	R&C 4.1, 4.2, 4.3
10	Tu 5 Oct	Phase Diagrams	R&C 4.4
11	Th 7 Oct	No class	
	Tu 12 Oct	NO CLASS - Monday Classes	
12	Th 14 Oct	Mixing	R&C 4.5 4.7
13	Tu 19 Oct	Solutions	R&C 5.1, 5.2, 5.3
14	Th 21 Oct	Midterm #1	
15	Tu 26 Oct	Gels	R&C 6.1, 6.2, 6.3
16	Th 28 Oct	Gels	R&C 6.4
17	Tu 2 Nov	Rubber Elasticity	R&C 7.1, 7.2, 7.3
18	Th 4 Nov	Linear Viscoelasticity	R&C 7.6
19	Tu 9 Nov	Dynamic Mechanical response	R&C 7.6.5
20	Th 11 Nov	Yielding in plastics	
21	Tu 16 Nov	Linear fracture mechanics models	
22	Th 18 Nov	Linear fracture mechanics models	
23	Tu 23 Nov	Elastic plastic fracture	
24	Th 25 Nov	Midterm #2	
	Tu 30 Nov	No class - Thanksgiving	
25	Th 2 Dec	Overview of plastics processing	
26	Tu 7 Dec	Conductive Polymers	
27	Th 9 Dec	Polymers for medical applications	
		Final Exam	