CHM 5511/Section 18C6 SP-2014 SCHANZE

Instructor: Dr. K. Schanze, CRB 428A

Text: L. H. Sperling, Introduction to Physical Polymer Science, Wiley (ISBN 978-0-471-70606-9)

Lecture: 285 FLG (Florida Gym), Tu/Th 4th Per. (10:40 AM – 11:30 AM)

First Exam: Thursday, Feb. 27

Second Exam: Tuesday, Apr. 22

Office Hours: 428 Sisler Hall, 5th period Tu/Th (11:45 am - 12:35 pm)

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Course www: on E-Learning link: http://lss.at.ufl.edu/

Course Description
Lectures will span fundamental concepts of the physical chemistry of macromolecules, experimental methods for measuring physical constants and properties of polymers, and examples from the literature.

Textbook and Outside Reading

Lecture materials are drawn primarily from two textbooks. 1) L. H. Sperling, Introduction to Physical Polymer Science, Wiley (ISBN 978-0-471-70606-9); 2) Hiemenz, P. C.; Lodge, T. P., Polymer Chemistry, Second Edition, CRC Press (ISBN 1-57444-779-3). If you wish to purchase a book, I advise to purchase Sperling.

Grading

Course grades will be determined based on the student's performance in the following areas:

Term Paper : 20%
Practice Problems : 10%
Exams (mid-term and final): 35% each

Term Paper

A term paper (ca. 10 – 20 pages) will be required for this course and will be graded on a 100 point scale. More information concerning this assignments is available on the E-Learning website (see assignments).

Professor : K. S. Schanze
Tentative Course Schedule - Subject to change*
CHM 6225, SP-2013

Week	Week	Topics	Sperling Section	
1	Jan. 6	Introduction – History of polymer science, chain molecules, introduction to molecular weight and polydispersity	Ch. 1	
2	Jan. 13	Polymer Structure and Conformation – chain conformation, chain length, persistence length, radius of gyration	Ch. 2	
3	Jan. 20	Dilute polymer solutions- thermodynamics, solubility parameter, Flory-Higgins theory	Ch. 3	
4	Jan. 27	Colligative properties of polymer solutions. Osmometry, intrinsic viscosity	Ch. 3	
5	Feb. 3	Static light scattering, Zimm plots, Dynamic light scattering, Fluorescence correlation spectroscopy	Ch. 3	
6	Feb. 10	Continued		
7	Feb. 17	Polymer solid state. Amorphous and crystalline states, neutron and x-ray scattering	Ch. 5	
8	Feb. 24	Continued	Ch. 6	
	Feb. 27	**Exam 1**		
	Mar. 3	**Spring Break Week**		
9	Mar. 10	Glass and rubber states– polymer viscoelastic behavior, glass transition (Tg)	Ch. 8	
10	**Mar. 17**	**ACS Meeting Dallas – No Class – Work on Term Papers**		
11	Mar. 24	Continued		
12	Mar. 31	Conjugated polymers – structure, optical and electronic properties	Special reading	
13	Apr. 7	Conjugated polymer optoelectronics		
14	Apr. 14	Dendritic polymers, polyrotaxanes, polycatenanes	Special reading	
15	**Apr. 22**	**Exam 2**		

* Version on the E-Learning site is official. Keep posted for updates.