Course Title: Synthesis and Characterization of Polymers

Instructor: Tara Meyer
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Class: 3-4:15 p.m. M, W
Rm 132 CSC

Textbook: “Polymer Chemistry: An Introduction”
Author: Stevens, Publisher: Oxford, Edition: 3, Year Published: 1999

Course Summary:

I. Introduction to Polymers (Chapter 1)
   & Molecular Weight Determination (Chapter 2)
II. Polymer Synthesis (Chapter 6, 7, 8, 10)
III. Polymer Characterization (Chapter 5)
IV. Polymer Structure and Morphology (Chapter 3)
V. Polymer Structure and Mechanical Properties (Chapter 4)
VI. Special Topics from the current literature

Grading:

2 Mid-term exams (100 each) 200
1 Final exam 150
Homework 30
In Class Work 30
Oral presentation on current polymer literature 50
460 pts. total

Course Objectives:

1. To understand the broad classes of polymers in terms of synthetic approach, functional
groups present in the main chain and on side chains, architecture and microstructure.
2. To know how to synthesize a wide variety of polymers using standard approaches.
3. To understand how the synthetic approach relates to polymer chain properties such as
molecular weight and polydispersity.
4. To know a range of characterization methodologies and how they relate to polymer structure and behavior.
5. To be familiar with characterization methodologies that relate to the bulk properties of polymers.
6. To understand the difference between structural characterization and bulk property measurement.
7. To be familiar with modern topics in the polymer chemistry literature.

**Schedule**

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<th>Topic</th>
<th>Dates</th>
<th>Reading</th>
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<tr>
<td>Introduction to Polymers</td>
<td>Jan. 6, 11</td>
<td>Chapter 1</td>
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<tr>
<td>Molecular Weight Determination</td>
<td>Jan 13, 20</td>
<td>Chapter 2</td>
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<td>Chain Polymerization</td>
<td>Jan 25-Feb. 15</td>
<td>Chapters 6, 7, 8</td>
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<td>Condensation Polymerization</td>
<td>Feb. 22-Mar 2</td>
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<td>Polymer Structure and Morphology</td>
<td>Mar 14-21</td>
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<td>March 23-30</td>
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<td>Polymer Characterization</td>
<td>April 6, 11</td>
<td>Chapter 5</td>
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<td>Special Topics from the current literature</td>
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**Exams/Important Dates**

Jan 19       Martin Luther King Day (No class)
Feb 17       Exam I (tentative)
Mar 5-13     Spring Break
Apr 4        Exam II (tentative)
*Apr 25 (Saturday of Finals Week) Final Exam (10:00 p.m. – 11:50 p.m.)

* This is the date and time listed on the final exam schedule.