

# *Chemistry 461/661 Polymer Synthesis*

*Fall 2009 3 Credits*

**Instructor:** W.A. Feld  
**Classroom:** 210 Fawcett  
**Class time:** 5:35 – 6:50 M W  
**Office:** 420 Oelman Hall  
**Phone:** 775-2511 (775-2855)  
**Office Hrs.** TBA  
**WWW:** <http://www.chm.wright.edu/feld/polymer/>

**Text:** *No specific Text*  
*Relevant Slides and Information will be available online*  
*Assigned Readings, WWW assignments, Literature Handouts*

<b>Grading:</b>	Five (5) Un/Announced Quizzes (25 pts, lowest dropped).....	100 pts
	Final Exam, Monday, November 16, 2009 .....	200 pts
	Report (Graduate Students).....	100 pts
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	Total (Graduate Students) .....	400 pts
	Total (Undergraduate Students).....	300 pts

*The following topics will be discussed using basic research, industrial examples and literature citations.*

- 1. Basic Principles of Polymer Chemistry*
- 2. Basic Polymer Chemistry Terms*
- 3. Basic Polymerization Mechanisms*
- 4. Models of Polymerizations*
- 5. Basic Copolymerization Principles*
- 6. Experimental Polymerization Conditions*
- 7. Literature and Product Reviews of Polymers*
- 8. Polymers on the WWW and through SciFinder Scholar*

## *CHM 461/661 Tentative Topic Schedule*

<i>Week</i>	<i>Monday</i>	<i>Wednesday</i>
<i>1</i>		<b>Sept. 9</b> Intro Topics
<i>2</i>	<b>Sept. 14</b> Chain-Reaction Systems	<b>Sept. 16</b> Chain-Reaction Systems
<i>3</i>	<b>Sept. 21</b> Chain-Reaction Systems	<b>Sept. 23</b> Chain-Reaction Systems
<i>4</i>	<b>Sept. 28</b> Chain-Reaction Systems	<b>Sept 30</b> Chain-Reaction Systems
<i>5</i>	<b>Oct. 5</b> Step-Reaction Systems	<b>Oct. 7</b> Step Reaction Systems
<i>6</i>	<b>Oct. 12</b> Step-Reaction Systems	<b>Oct. 14</b> Step-Reaction Systems
<i>7</i>	<b>Oct. 19</b> Step-Reaction Systems	<b>Oct. 21</b> Step-Reaction Systems
<i>8</i>	<b>Oct. 26</b> New Polymerization Methods / Topics	<b>Oct. 28</b> New Polymerization Methods / Topics
<i>9</i>	<b>Nov. 2</b> New Polymerization Methods / Topics	<b>Nov. 4</b> Graduate Student Presentations
<i>10</i>	<b>Nov. 9</b> Graduate Student Presentations	<b>Nov. 11</b> Veteren's Day Holiday
	<b>Monday, November 16, 2008</b> Final Exam, 5:45 – 7:45	

# ***CHM 661 Graduate Student Reports***

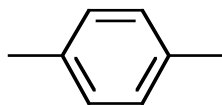
*November 4 and 9, 2009*

These reports are intended to give graduate students a chance to interpret the literature associated with polymer synthesis. They are meant to be brief (15 – 20 min) and to the point - but complete. Think of the assigned article (see website for pdf file) as a research area that you or your future employer would like to pursue.

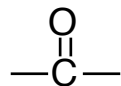
The report should include the following as minimum information.

1. Synthesis of monomer(s) (if this is an important part of the paper)
2. Type of polymerization (step-growth, chain-growth, etc.)
3. Mechanistic details
4. Molecular weights (determined or expected)
5. Experimental conditions (normal, special and why)
6. Other pertinent information

## Common Bivalent Names for IUPAC Polymer Naming



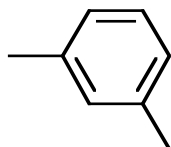
1,4-phenylene



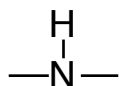
carbonyl



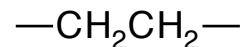
methylene



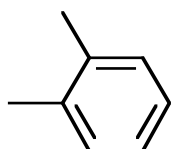
1,3-phenylene



imino



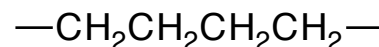
ethylene, 1,2-ethanediyl



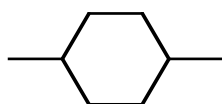
1,2-phenylene



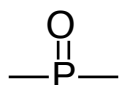
oxy



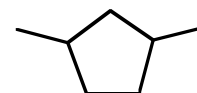
1,4-butanediyl



1,4-cyclohexanediyl



????



1,3-cyclopentane



????

## Name the following polymers using IUPAC nomenclature

