

# Content of CHEM 330

<b>1. Generalities</b>
1.1 Definition and Classification of Polymers 1.2 Natural polymers 1.3 Synthetic polymers
<b>2. Determination of structure and microstructure</b>
<b>2.1</b> Chemical structure and microstructure 2.1.1 <i>Naming the polymers and copolymers</i> 2.1.2 <i>Definition of the polymer structures</i> 2.1.3 <i>Definition of the polymer microstructure (tacticity, cis, trans, etc)</i> <b>2.2</b> <i>Polymer crystalline and polymer amorphous</i>
<b>3. Polymerization and copolymerization of monomers</b>
3.1 Properties of polyaddition reaction 3.1.1 <i>Free Radical Polymerization</i> 3.1.2 <i>Controlled radical polymerization (CRP)</i> 3.1.3 <i>Anionic polymerization</i> 3.1.4 <i>Cationic polymerization</i> 3.1.5 <i>Coordination polymerizations</i>  3.2 Properties of free radical copolymerization reaction 3.2.1 <i>Alternative Copolymer</i> 3.2.2 <i>Random copolymers</i> 3.2.3 <i>Block copolymers</i> 3.2.4 <i>Grafting copolymers</i>
<b>4. Techniques used to Determine the average molecular weight</b>
4.1 Notion of molecular mass in the polymers (statistical calculation) 4.2 Experimental methods used to determine the molecular mass of polymers 4.2.1 <i>Viscosimetry</i> 4.2.2 <i>Osmometry</i> 4.2.3 <i>Terminal group evaluation</i> 4.2.3 <i>Size exclusion Chromatography</i> 4.2.4 <i>Light scattering</i>
<b>5. Thermal properties of polymers</b>
5.1 DSC technique and the transition, melting and crystallization principles 5.2 TGA technique and degradation, depolymerization and thermal stability notions