CHAPTER OVERVIEW

8: STRUCTURE AND SYNTHESIS OF ALKENES

Learning Objectives:

After reading the chapter and completing the exercises and homework, a student can be able to:

- describe the electronic structure of alkenes using Molecular Orbital (MO) Theory and Orbital Hybridization - refer to section 8.1
- memorize the common names for vinylic and allylic groups including isoprene and styrene refer to section 8.2
- predict the relative physical properties of alkenes - refer to section 8.2
- recognize and classify the stereochemistry of alkenes using the cis/trans and E/Z systems - refer to section 8.3
- calculate the Degrees of Unsaturation (DU) and apply it to alkene structure - refer to section 8.4
- give the IUPAC names for alkenes given their structure & vice versa including E/Z isomers - refer to section 8.5 and chapter 3
- use heats of hydrogenation to compare the stabilities of alkenes - refer to section 8.6
- interpret and draw reaction energy diagrams for dehydrohalogenation of R-X's and alcohol dehydration reactions - refer to sections 8.7 and 8.8 respectively and chapter 7
- propose mechanisms for a dehydrohalogenation or dehydration reactions - refer to sections 8.7 and 8.8 respectively and chapter 7
- predict the products and specify the reagents for alkene synthesis from dehydrohalogenation of R-X's and alcohol dehydration reactions - refer to sections 8.7 and 8.8 respectively
- predict and explain the stereochemistry of E2 eliminations to form alkenes, especially from cyclohexanes - refer to sections 8.7 and 8.8 and chapter 7
- discuss the uses and sources of alkenes including catalytic cracking - refer to section 8.9

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