

8: Alkenes and Alkynes

Preview

8.1 Alkenes

Unbranched Alkenes (8.1A)

Ethene.

Propene.

1-Butene and 2-Butene.

Other Alkenes and Cycloalkenes.

Alkene Stereoisomers (8.1B)

(E)-2-Butene and (Z)-2-Butene.

Other E and Z Alkenes.

E,Z Assignment Rules.

E and Z Stereoisomers are Diastereomers.

cis and trans Isomers.

More than One C=C in a Molecule (8.1C)

Polyenes.

Allenes.

Nomenclature of Substituted Alkenes (8.1C)

Alkyl and Halogen Substituted Alkenes.

Alkyl and Halogen Substituted Cycloalkenes.

Alkyl and Halogen Substituted Polyenes.

Alkenes With OH or NH₂ Groups.

Common Names of Substituted and Unsubstituted Alkenes.

Alkene Stability (8.1D)

Relative Stability of Isomeric E and Z Alkenes.

C=C Substitution and Alkene Stability.

Stability of Cycloalkenes.

8.2 Alkynes

Unbranched Alkynes (8.2A)

Nomenclature.

Alkyne Structure.

Alkyne Stability (8.2B)

C-H and C-C Bond Lengths (8.2C)

Alkanes, Alkenes, and Alkynes.

Acidity of C≡C-H Hydrogens (8.2D)

Allenes (8.2E)

Nomenclature.

Structure and Bonding.

Bond Lengths.

8.3 Spectrometric Features of C=C and C≡C Bonds

¹³C NMR Spectrometry (8.3A)

C=C Bonds.

C≡C Bonds.

Allenes.

¹H NMR Spectrometry (8.3B)

C=C-H ¹H δ Values.

¹H Spin-Splitting in Alkenes.

Alkynes.

Infrared Spectrometry (8.3C)

UV-Vis Spectrometry (8.3D)

Chapter Review