

CHAPTER OVERVIEW

10: ALKYNES

LEARNING OBJECTIVES

After reading this chapter and completing ALL the exercises, a student can be able to

- apply bonding theories to the structure of alkynes and distinguish between internal and terminal triple bonds - refer to section 10.1
- predict relative physical properties of alkynes, such as relative boiling points and solubilities - refer to section 10.1
- predict the products and specify the reagents for the synthesis of alkynes from the double elimination of dihaloalkanes refer to section 10.2
- predict the products and specify the reagents for the Electrophilic Addition Reactions (EARs) of alkynes with HX and X₂ - refer to section 10.3
- predict the products and specify the reagents for the Markovnikov-products of alkyne hydration - refer to section 10.4
- predict the products and specify the reagents for the anti-Markovnikov-products of alkyne hydration - refer to section 10.5
- predict the products and specify the reagents for the full or partial reduction of alkynes - refer to section 10.6
- predict the products and specify the reagents for the oxidation of alkynes - refer to section 10.7
- explain why alkynes are more acidic than alkanes and alkenes - refer to section 10.8
- predict the products and specify the reagents to generate nucleophilic acetylide ions and heavy metal acetylides - refer to section 10.8
- predict the products and specify the reagents to synthesize larger alkynes with acetylide ions - refer to section 10.9
- use retrosynthetic analysis to design a multi-step synthesis with correct regiochemistry and stereochemistry using the reactions studied to date - refer to section 10.10

Please note: IUPAC nomenclature and important common names of alkynes were explained in Chapter 3.

[10.1: Structure and Physical Properties](#)

[10.2: 10.2 Synthesis of Alkynes - Elimination Reactions of Dihalides](#)

[10.3: Reactions of Alkynes - Addition of HX and X₂](#)

[10.4: Hydration of Alkynes for Markovnikov Products](#)

[10.5: Hydration of Alkynes for Anti-Markovnikov Products](#)

[10.6: 10.6 Reduction of Alkynes](#)

[10.7: Oxidation of Alkynes](#)

[10.8: Acidity of Terminal Alkynes and Acetylide Ions](#)

[10.9: Synthesis of Larger Alkynes from Acetylides](#)

[10.10: An Introduction to Multiple Step Synthesis](#)

[10.11: Additional Exercises](#)

[10.12: Solutions to Additional Exercises](#)

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