

TABLE OF CONTENTS

Licensing

1: Advantages & Disadvantages of Radical Reactions

- II. Advantages of Radical Reactions
- III. Disadvantages of Radical Reactions
- IV. Looking Ahead

2: Halogenated Compounds

- I. Introduction
- II. Radical Formation by Dehalogenation
- III. Radical Reactions
- IV. Halogenation
- V. Summary

3: Compounds with Carbon–Sulfur Single Bonds

- I. Introduction
- II. Reaction Mechanisms
- III. Alkylthio and Arylthio Substituted Carbohydrates and Related Compounds
- IV. Dithioacetals
- V. Thiocarbonates and Dithiocarbonates
- VI. O-Thiocarbonyl Compounds
- VII. Sulfones
- VIII. Thiols and Thiyl Radicals
- IX. Summary

4: Selenides & Tellurides

- II. Selenides
- III. Tellurides
- IV. Summary

5: Acetals & Ethers

- II. Bromination of Acetals and Ethers
- III. Thiol-Catalyzed Reactions of Acetals: Polarity-Reversal Catalysis
- IV. Ring Opening of Specially Designed Acetals
- V. Internal Hydrogen-atom abstraction in Acetals and Ethers
- VI. Radical Cyclization: The Role of Ethers and Acetals
- VII. Silyl Ether Rearrangement
- VIII. Summary

6: Alkoxy Radicals

- II. Alkoxy Radicals
- III. Summary
- Index

7: Unprotected Carbohydrates

- II. Radicals That Abstract Hydrogen Atoms from Unprotected Carbohydrates
- III. First Formed Radicals: Radicals Produced by Hydrogen-Atom Abstraction from Unprotected Carbohydrates
- IV. Reactions of First-Formed Radicals
- V. Reactions of Carbonyl-Conjugated Radicals
- VI. Oxidative Degradation of Carbohydrates
- VII. Reactions of Polysaccharides
- VIII. Summary

8: Carboxylic Acids & Esters

- II. Replacement of an Acyloxy Group with a Hydrogen Atom
- III. Photochemical Electron Transfer to Carboxylic Acid Esters
- IV. Nonphotochemical Electron Transfer to Carboxylic Acid Esters
- V. Acyloxy Group Migration
- VI. Reactions of Carboxylic Acids
- VII. Summary

9: Phosphoric Acid Esters

- II. Phosphatoxy Group Migration
- III. Radical Cation Formation from Nucleotides
- IV. Migration Reactions in Other β -Ester Radicals
- V. Summary

10: Aldehydes & Ketones

- I. Introduction
- II. Intramolecular Addition of Carbon-Centered Radicals to Aldehyde and Keto Groups
- III. Migration of Aldehyde Groups
- IV. Addition of Tin- and Silicon-Centered Radicals to Aldehydes
- V. Reaction of Samarium(II) Iodide with Aldehydes and Ketones
- VI. Ketone Photolysis
- VII. Cyclization of Acylsilanes
- VIII. Reactions of α -Acyloxyketones
- IX. Summary

11: Synthesis of O-Thiocarbonyl Compounds

- II. Xanthates
- III. (Thiocarbonyl)imidazolides
- IV. Aryl Thionocarbonates
- V. Cyclic Thionocarbonates
- VI. Thionoesters
- VII. Factors Affecting O-Thiocarbonyl Compound Synthesis
- VIII. Summary

12: Reactions of O-Thiocarbonyl Compounds

- II. Deoxygenation: The Barton-McCombie Reaction
- III. Radical Addition
- IV. Radical Cyclization
- V. Comparing the Reactivity of O-Thiocarbonyl and O-Carbonyl Carbohydrates
- VI. Summary

13: Carboxylic Acid Esters of N-Hydroxypyridine-2-thione

- II. Reaction Mechanism
- III. Group Replacement Reactions
- IV. Addition Reactions
- V. Cyclization Reactions
- VI. Generating Methyl Radicals
- VII. Summary

14: Nitro Compounds

- II. Reaction Mechanisms
- III. C-Nitro Carbohydrates
- IV. O-Nitro Carbohydrates
- V. Reactions of Nitro Compounds with Silanes
- VI. Summary

15: Azides & Azo Compounds

- II. Azides
- III. Azo Compounds
- IV. Summary

16: Nitriles & Isonitriles

- II. Isonitriles
- III. Nitriles
- IV. Summary

17: Oxime Ethers & Related Compounds

- II. Oximes
- III. Hydrazones and Imines
- IV. Ketonitrone
- V. Protonated Heteroaromatics
- VI. Protected Amines
- VII. Summary

18: Compounds with Carbon–Carbon Multiple Bonds I: Addition Reactions

- II. Defining Characteristics of Radical Addition Reactions
- III. Chain Reactions
- IV. Nonchain Reactions: Radical Formation by Electron Transfer
- V. Summary

19: Compounds With Carbon–Carbon Multiple Bonds II: Cyclization Reactions

- II. Ease of Reaction between a Carbon-Centered Radical and a Multiple Bond
- III. Reaction Selectivity
- IV. Unsaturated Carbohydrates That Undergo Radical Cyclization
- V. An Organization for Carbohydrates That Undergo Radical Cyclization
- VI. Summary

20: Reactions of Samarium(II) Iodide With Carbohydrate Derivatives

- II. Radical Formation
- III. Formation of Organosamarium Compounds
- IV. Reactions of Organosamarium Compounds
- V. Cyclization Reactions
- VI. Radical Addition and Hydrogen-Atom Abstraction
- VII. Comparison of Reactions of Chromium(II) Reagents With Those of Samarium(II) Iodide
- VIII. Summary

21: Reactions of Radicals Produced by Electron Transfer to Manganese(III) Acetate & Ammonium Cerium(IV) Nitrate

- II. Manganese(III) Acetate
- III. Ammonium Cerium(IV) Nitrate
- IV. Summary

22: Reactions of Carbohydrate Derivatives With Titanocene(III) Chloride

- II. Reactions
- III. Electron Donation by a Ruthenium Complex
- IV. Summary

23: Organocobalt & Organomercury Compounds

- I. Organocobalt Compounds
- II. Organomercury Compounds
- III. Summary

24: Redox Couples

- II. Electron Transfer from a Redox Couple
- III. Reactions with Redox Couples
- IV. Reaction Mechanism
- V. Summary

Appendix I: Hydrogen-Atom Donors

- II. Organotin Hydrides
- III. Organosilanes
- IV. Compounds with Phosphorous–Hydrogen Bonds
- V. Compounds with Boron–Hydrogen Bonds
- VI. Compounds with Carbon–Hydrogen Bonds
- VII. Compounds with Sulfur–Hydrogen or Selenium–Hydrogen Bonds
- VIII. Summary

[Index](#)

[Glossary](#)

[Detailed Licensing](#)

[References](#)