

Suggested Readings

General

- G. W. Wheland, *Advanced Organic Chemistry*, 3rd ed., Wiley, New York, 1960.
- J. Hine, *Physical Organic Chemistry*, 2nd ed., McGraw-Hill, New York, 1962.
- C. K. Ingold, *Structure and Mechanism in Organic Chemistry*, 2nd ed., Cornell University Press, Ithaca, 1969.
- J. March, *Advanced Organic Chemistry*, McGraw-Hill, New York, 1968.
- L. P. Hammett, *Physical Organic Chemistry*, 2nd ed., McGraw-Hill, New York, 1970.
- E. S. Gould, *Mechanism and Structure in Organic Chemistry*, Holt, New York, 1959.
- P. Sykes, *A Guidebook to Mechanism in Organic Chemistry*, 3rd ed., Wiley, New York, 1970.
- R. Breslow, *Organic Reaction Mechanisms*, W. A. Benjamin, New York, 1965.
- H. O. House, *Modern Synthetic Reactions*, W. A. Benjamin, New York, 1965.
- V. Gold., ed., *Advances in Physical Organic Chemistry*, Academic Press, New York; a series starting in 1963.
- A. Streitwieser and R. W. Taft, ed., *Progress in Physical Organic Chemistry*, Wiley, New York; a series starting in 1963.
- S. Patai, ed., *The Chemistry of Functional Groups*, Wiley, New York; a series starting in 1964.
- E. H. Rodd, ed., *Chemistry of Carbon Compounds*, Elsevier, New York; a series starting in 1951, 2nd ed. starting in 1964.
- Organic Reactions*, Wiley, New York; a series starting in 1942. Each chapter discusses one reaction ("The Clemmensen Reduction," "Periodic Acid Oxidation," etc.) with particular emphasis on its application to synthesis.
- Note:* Some of the above books will be referred to later by abbreviated names, e.g., O. R. III-2 for *Organic Reactions*, Vol. III, Ch. 2.

Molecular structure and intermolecular forces

- G. W. Wheland, *Adv. Org. Chem.*, Ch. 1, 3.
- L. N. Ferguson, *The Modern Structural Theory of Organic Chemistry*, Prentice-Hall, Englewood Cliffs, N. J., 1963.
- C. K. Ingold, *Struct. and Mech.*, Ch. I, II, IV.
- L. Pauling, *The Nature of the Chemical Bond*, 3rd ed., Cornell University Press, Ithaca, 1960

- G. W. Wheland, *Resonance in Organic Chemistry*, Wiley, New York, 1955.
- C. A. Coulson, "The Meaning of Resonance in Quantum Chemistry," *Ehdeavour*, **6**, 42 (1947).
- M. J. S. Dewar, *Hyperconjugation*, Ronald Press, New York, 1962.
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- W. Baker, "The Widening Outlook in Aromatic Chemistry," *Chemistry in Britain*, **1**, 191, 250 (1965).
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- G. W. A. Fowles, "Lone Pair Electrons," *J. Chem. Educ.*, **34**, 187 (1957).
- E. Cartmell and G. W. A. Fowles, *Valency and Molecular Structure*, 3rd ed., Butterworths, London, 1966.
- M. Orchin and H. H. Jaffé, *The Importance of Antibonding Orbitals*, Houghton-Mifflin, Boston, 1967.
- R. B. Woodward and R. Hoffmann, *The Conservation of Orbital Symmetry*, Academic Press, New York, 1970.
- J. J. Vollmer and K. L. Service, "Woodward-Hoffmann Rules: Electrocyclic Reactions," *J. Chem. Educ.*, **45**, 214 (1968); "Woodward-Hoffmann Rules: Cycloaddition Reactions," *J. Chem. Educ.*, **47**, 491 (1970).
- R. G. Pearson, "Molecular Orbital Symmetry Rules," *Chem. Eng. News*, Sept. 28, 1970, p. 66.

Isomerism and stereochemistry

- E. L. Eliel, *Stereochemistry of Carbon Compounds*, McGraw-Hill, New York, 1962.
- E. L. Eliel, *Elements of Stereochemistry*, Wiley, New York, 1969.
- G. W. Wheland, *Adv. Org. Chem.*, Ch. 2, 6-9.
- K. Mislow, *Introduction to Stereochemistry*, W. A. Benjamin, New York, 1965.
- E. L. Eliel, N. L. Allinger, S. J. Angyal, and G. A. Morrison, *Conformational Analysis*, Interscience-Wiley, New York, 1965.
- R. S. Kahn, "An Introduction to the Sequence Rule," *J. Chem. Educ.*, **41**, 116 (1964).
- E. L. Eliel, "Recent Advances in Stereochemical Nomenclature," *J. Chem. Educ.*, **48**, 163 (1971).
- D. F. Mowery, Jr., "The Cause of Optical Inactivity," *J. Chem. Educ.*, **29**, 138 (1952).
- J. M. Bijvoet, "Determination of the Absolute Configuration of Optical Antipodes," *Endeavour*, **14**, 71 (1955).
- M. L. Wolfrom, "Optical Activity and Configurational Relations in Carbon Compounds," *Rec. Chem. Progr. (Kresge-Hooker Sci. Lib.)*, **16**, 121 (1955).

Acids and bases

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- G. W. Wheland, *Adv. Org. Chem.*, Ch. 5.
- C. A. VanderWerf, *Acids, Bases, and the Chemistry of the Covalent Bond*, Reinhold, New York, 1961.
- R. P. Bell, *The Proton in Chemistry*, Cornell University Press, Ithaca, 1959.
- J. Hine, *Phys. Org. Chem.*, Ch. 2, "Acids and Bases."
- C. K. Ingold, *Struct. and Mech.*, Ch. XIV.

Nomenclature and pronunciation

- A. M. Patterson, L. T. Capell, and M. A. Magill, "Nomenclature of Organic Compounds," *Chem. Abs.*, **39**, 5875-5950 (1945).
- E. J. Crane, "The Pronunciation of Chemical Words," *Ind. Eng. Chem., News Ed.*, **12**, 202 (1934).

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- M. Gomberg, "An Instance of Trivalent Carbon: Triphenylmethyl," *J. Am. Chem. Soc.*, **22**, 757 (1900).
- G. W. Wheland, *Adv. Org. Chem.*, Ch. 15.
- J. Hine, *Phys. Org. Chem.*, Ch. 18-23.
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- E. S. Huyser, *Free-Radical Chain Reactions*, Wiley, New York, 1970.
- C. Walling, *Free Radicals in Solution*, Wiley, New York, 1957.
- M. C. R. Symons, "The Identification of Organic Free Radicals by Electron Spin Resonance," Vol. 3, p. 284, of *Adv. in Phys. Org. Chem.*

Carbonium ions

- F. C. Whitmore, "Alkylation and Related Processes of Modern Petroleum Practice," *Chem. Eng. News*, **26**, 668 (1948).
- C. K. Ingold, *Struct. and Mech.*, Ch. VII.
- D. Bethell and V. Gold, "The Structure of Carbonium Ions," *Quart. Revs. (London)*, **12**, 173 (1958).
- P. D. Bartlett, *Nonclassical Ions*, W. A. Benjamin, New York, 1965.
- H. C. Brown, "The Norbornyl Cation—Classical or Non-classical?," *Chemistry in Britain*, **2**, 199 (1966).
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Carbanions and tautomerism

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- C. K. Ingold, *Struct. and Mech.*, Ch. X.
- G. W. Wheland, *Adv. Org. Chem.*, Ch. 14.
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- C. K. Ingold, *Struct. and Mech.*, Ch. 7.
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- A. Streitwieser, Jr., *Solvolytic Displacement Reactions*, McGraw-Hill, New York, 1962.
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- C. K. Ingold, *Struct. and Mech.*, Ch. VI.
- J. March, *Adv. Org. Chem.*, Ch. 11.
- R. O. C. Norman and R. Taylor, *Electrophilic Substitution in Benzenoid Compounds*, Elsevier, New York, 1965.

- R. M. Roberts, "Friedel-Crafts Chemistry," *Chem. Eng. News*, Jan. 25, 1965, p. 96.
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O. R. XIII-3, C. Walling, and E. S. Huyser, "Free Radical Additions to Olefins and Acetylenes to Form Carbon-Carbon Bonds"; XIII-1, G. Zweifel and H. C. Brown, "Hydration of Olefins, Dienes, and Acetylenes via Hydroboration"; XIII-2, W. E. Parham and E. E. Schweizer, "Halocyclopropanes from Halocarbenes."
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Oxidation

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Reduction and hydrogenation

- H. O. House, *Mod. Syn. Reactions*, Ch. 1-3.
J. March, *Adv. Org. Chem.*, Ch. 19.
O. R. I-7, E. L. Martin, "The Clemmensen Reduction"; IV-8, D. Todd, "The Wolff-Kishner Reduction"; II-8, A. L. Wilds, "Reduction with Aluminum Alkoxides

(the Meerwein-Ponndorf-Verley Reduction)"; VI-10, W. G. Brown, "Reductions by Lithium Aluminum Hydride."

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 J. March, *Adv. Org. Chem.*, Ch. 18.
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Carbonyl compounds

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 J. Hine, *Phys. Org. Chem.*, Ch. 11.
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α,β -Unsaturated carbonyl compounds

- C. K. Ingold, *Struct. and Mech.*, pp. 1015-1037.
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- O. R. IV-1, M. C. Kloetzel, "The Diels-Alder Reaction with Maleic Anhydride"; V-2, H. A. Bruson, "Cyanoethylation"; X-3, E. D. Bergmann, D. Ginsburg and E. Pappo, "The Michael Reaction."

Nitrogen compounds

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Polymers and polymerization

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Use of isotopes

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Analysis

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