

REFERENCES

1. Wiseman, P. *Petrochemicals*. Chichester: Ellis Horwood Publishing, **1986**, 13.
2. Kirk-Othmer. *Encyclopedia of Chemical Technology*. 2nd ed. **1968**, 675.
3. Parrish, G. W. and Iltel, S. D. *Homogeneous Catalysis*. 2nd ed. New York: John Wiley & Sons, **1992**, 242.
4. Bernadou, J.; Pitie, M. and Meunier, B. *Oxidation at Carbon-1' of DNA Deoxyribose by the Mn-TMPy/KHSO₅ System Results form a Cytochrome P-450-Type Hydroxylation Reaction*, *J. Am. Chem. Soc.*, **1995**, *117*, 2935-2936.
5. Groves, J. T.; Haushalter, R. C.; Nakamura, M.; Nemo, T. E. and Evans, B. J. *High-Valent Iron-Porphyrin Complexes Related to Peroxidase and Cytochrome P-450*, *J. Am. Chem. Soc.*, **1981**, *103*, 2884-2886.
6. Bayer, H. and Walter, W. *Handbook of Organic Chemistry*. **1996**, 398.
7. Hagen, J. *Industrial Catalysis*. **1999**, 11.
8. Spessard, G. O. and Miessler, G. L. *Organometallic Chemistry*. **1997**, 249.
9. Murahashi, S. and Komiya, N. *New Types of Catalytic Oxidation in Organic Synthesis*, *Catalysis Today*, **1998**, *41*, 339-349.
10. Murahashi, S.; Oda, Y.; Naota, T. and Kuwabara, T. *Ruthenium-Catalyzed Cytochrome P-450 Type Oxidation of Alkanes with Alkyl Hydroperoxides*, *Tetrahedron Lett.*, **1993**, *34*, 1299-1302.
11. McGraw-Hill *Encyclopedia of Science & Technology*, 7th ed., 209.
12. Shanmugathan, S.; Edwards, C. and Boyle, R. W. *Advances in Modern Synthetic Porphyrin Chemistry*, *Tetrahedron*, **2000**, *56*, 1025-1046.

13. Marsh, D. F. and Mink, L. M. *Microscale Synthesis and Electronic Absorption Spectroscopy of Tetraphenylporphyrin $H_2(TPP)$ and Metalloporphyrins $Zn^{II}(TPP)$ and $Ni^{II}(TPP)$* , *J. Chem. Ed.*, **1996**, 73, 1188-1189.
14. Kendrick, M. J.; May, M. T.; Plishka, M. J. and Robinson, K D. *Metals in Biological Systems*. **1992**, 61.
15. Moro-oka, Y. *Reactivities of Active Oxygen Species and Their Roles in The Catalytic Oxidation of Inactive Hydrocarbon*, *Catalysis Today*, **1998**, 45, 3-12.
16. Barton, D. H. R. *Gif Chemistry: The Present Situation*, *Tetrahedron*, **1998**, 54, 5805-5817.
17. Hsu, Y. *Introduction to Petrochemicals*. 2nded. **1967**, 257.
18. Richardson, D.; Xu, C.; Abboud, K. and Weakley, G. K. *Catalytic Oxidation of Hydrocarbons*, U.S. Pat. No. 6,307,100, **2001**.
19. Castellan, A.; Bart, J. C. J. and Cavallaro, S. *Industrial Production and Uses of Adipic Acid*, *Catalysis Today*, **1991**, 9, 237-254.
20. Grummitt, O. *Organic Syntheses*. **1955**, 807.
21. Barton, D. H. R.; Beviere, S. D. and Hill, D. R. *The Functionalization of Saturated Hydrocarbons Part XXIX. Application of tert-Butyl Hydroperoxide and Dioxygen Using Soluble Fe(III) and Cu(II) Chelates.*, *Tetrahedron*, **1994**, 50, 2665-2670.
22. Park, O. S.; Nam, S. S.; Kim, S. B. and Lee, K. W. *Gif-KRICT Biomimic Oxidation of Cyclohexane: The Influence of Metal Oxides*, *Bull. Korean Chem. Soc.*, **1999**, 20, 49-52.

23. Takagi, S.; Takahashi, E. and Miyamoto, T. K. *A New Iron (III) Porphyrin System for Olefin Epoxidation Catalysts*, *Chem. Lett.*, **1986**, 1275-1278.
24. Battioni, P.; Renaud, J. P.; Bartoli, J. F.; Reina-Artiles, M.; Fort, M. and Mansuy, D. *Monoxygenase-like Oxidation of Hydrocarbons by H₂O₂ Catalyzed by Manganese Porphyrins and Imidazole: Selection of the Best Catalytic System and Nature of the Active Oxygen Species*, *J. Am. Chem. Soc.*, **1988**, 8462-8470.
25. Sanderson, J. R.; Marquis, E. T. and Payton, H. F. *Production of Detergent Range Alcohols and Ketones Using Porphyrin Catalysts*, U.S. Pat. No. 4,978,799, **1990**.
26. Thellend, A.; Battioni, P. and Mansuy, D. *Ammonium Acetate as a Very Simple and Efficient Cocatalyst for Manganese Porphyrin-catalysed Oxygenation of Hydrocarbons by Hydrogen Peroxide*, *J. Chem. Soc., Chem. Commun.*, **1994**, 1035-1036.
27. Murahashi, S.; Naota, T. and Komiya, N. *Metalloporphyrin-Catalyzed Oxidation of Alkanes with Molecular Oxygen in the Presence of Acetaldehyde*, *Tetrahedron Lett.*, **1995**, 36, 8059-8062.
28. Mandal, A. K.; Khanna, V. and Iqbal, J. *Cobalt(II) Porphyrin : A Versatile Catalyst for the Oxidation of Organic Substrates with Dioxygen and 2-Methyl Propanal*, *Tetrahedron Lett.*, **1996**, 37, 3769-3772.
29. Wu, X.; Oshima, Y. and Koda, S. *Aerobic Oxidation of Cyclohexane Catalyzed by Fe (III) (5,10,15,20-tetrakis(pentafluorophenyl)porphyrin)Cl in Sub- and Super-Critical CO₂*, *Chem. Lett.*, **1997**, 1045-1046.

30. Nam, W.; Goh, Y. M.; Lee, Y. J.; Lim, M. H. and Kim, C. *Biomimic Alkane Hydroxylations by an Iron(III) Porphyrin Complex with H₂O₂ and by a High-Valent Iron(IV) Oxo Porphyrin Cation Radical Complex*, *Inorg. Chem.*, **1999**, *38*, 3238-3240.
31. Falvo, R. E.; Mink, L. M. and Marsh, D. F. *Microscale Synthesis and ¹H NMR Analysis of Tetraphenylporphyrins*, *J. Chem. Ed.*, **1999**, *76*, 237-239.
32. Nian, J. L., Min; L. and Kong, H. A. *Syntheses and Characterization of Some Porphyrins and Metalloporphyrins*, *Inorg. Chim. Acta*, **1990**, *178*, 59-65.
33. Saleh, R. Y. and Straub, D. K. *¹³C-NMR Spectra of Tetra(3,4,5-trimethoxyphenyl)-porphyrin and its Zinc and Iron (III) Complexes*, *Inorg. Chim. Acta*, **1989**, *156*, 9-11.
34. Harada, A.; Shiotsuki, K.; Fukushima, H.; Yamaguchi, H. and Kamachi, M. *Supramolecular Assembly of Porphyrins and Monoclonal Antibodies*, *Inorg. Chem.*, **1995**, *34*, 1070-1076.
35. Inamo, M.; Kamiya, N.; Inada, Y.; Nomura, M. and Funahashi, S. *Structural Characterization and Formation Kinetics of Sitting-Atop (SAT) Complexes of Some Porphyrins with Copper (II) Ion in Aqueous Acetonitrile Relevant to Porphyrin Metalation Mechanism. Structures of Aquacopper (II) and Cu (II)-SAT Complexes As Determined by XAFS Spectroscopy*, *Inorg. Chem.*, **2001**, *40*, 5636-5644.
36. Harden, G. J. *Kinetics of the Iron Porphyrin Catalyzed Oxidation of Cyclohexene with Substituted Iodosylbenzenes*, *J. Chem. Soc., Perkin Trans. 2*, **1995**, 1883-1887.

37. Kadish, K. M. and Shiue, L. R. *Reactions of Metalloporphyrin π Radicals. 3. Solvent- and Ligand-Binding Effects on the One-Electron Oxidation of 5, 10, 15, 20-Tetraphenylporphyrin d^{10} Metal Ions in Nonaqueous Media, Inorg. Chem., 1982, 21, 3623-3630.*
38. Fieser, L. F. and Williamson, K. L. *Organic Experiments*, 7th ed., 1992.
39. Barton, D. H. R. and Launay, F. *The Selective Functionalization of Saturated Hydrocarbons. Part 47. Investigation of the Size of the Reagent Involved in the Fe^{II} - Fe^{IV} Manifold, Tetrahedron, 1998, 12699-12706.*
40. Barton, D. H. R., Beviere, S. D., Chavasiri, W., Doller, D. and Hu, B. *Metal Dependence in Gif-type Reactions. The Cu (II)-catalyzed Olefination of Saturated Hydrocarbons by tert-Butyl Hydroperoxide, Tetrahedron Lett., 1993, 34, 567-570.*
41. Mansuy, D.; Bartoli, J. F. and Momenteau, M. *Alkane Hydroxylation Catalyzed by Metalloporphyrins : Evidence for Different Active Oxygen Species with Alkylhydroperoxides and Iodosobenzene as Oxidants, Tetrahedron Lett., 1982, 23, 2781-2784.*
42. Lee, K. A. and Nam, W. *Determination of Reactive Intermediates in Iron porphyrin Complex-Catayzed Oxygenations of Hydrocarbons Using Isotopically Labeled Water: Mechanistic Insights, J. Am. Chem. Soc., 1997, 119, 1996-1922.*
43. Nappa, M. J. and Tolman, C. A. *Steric and Electronic Control of Iron Porphyrin Catalyzed Hydrocarbon Oxidations, Inorg. Chem., 1985, 24, 4711-4719.*

44. Barton, D. H. R.; Csuhai, E. and Doller, D. *Comparison of Gif-Type Reactivity towards Alkanes with Standard Radical Reaction Selectivity. Gif Oxidation of n-Butane and Propane, Tetrahedron Lett.*, **1990**, *31*, 3097-3100.
45. a) Huyser, E. S.; Schimke, H. and Burham, R. L. *Competition Reactions of Cyloalkanes with Trichloromethanesulfonyl Chloride and Bromotrichloro methane, J. Am. Chem. Soc.*, **1963**, 2141-2143. b) Traynham, J. G.; Lee, Y-S. *Radical Brominations of Alkanic Positions by Bromine and by N-Bromosuccinimide, J. Am. Chem. Soc.*, **1974**, 3590-3594.
46. Barton, D. H. R. and Gloahec, V. N. L. *The Radical Chemistry of t-Butyl Hydroperoxide (TBHP) - Part 3 – Further Studies on Hydrocarbon Activation, Tetrahedron*, **1998**, *54*, 15457-15468.
47. Barton, D. H. R., Beviere, S. D., Chavasiri, W., Csuhai, E., Doller, D. and Liu, W. G. *The Functionalization of Saturated Hydrocarbons. Part 20.⁺ Alkyl Hydroperoxides: Reaction Intermediates in the Oxidation of Saturated Hydrocarbons by Gif-Type Reactions and Mechanistic Studies on Their Formation, J. Am. Chem. Soc.*, **1992**, *114*, 2147-2156.

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