

JOC *Recent Reviews*

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Reviews are listed in order of appearance in the sources indicated. In multidisciplinary review journals, only those reviews which fall within the scope of this Journal are included. Sources are listed alphabetically in three categories: regularly issued review journals and series volumes, contributed volumes, and other monographs. Titles are numbered serially, and these numbers are used for reference in the index.

Major English-language sources of critical reviews are covered. Encyclopedic treatises, annual surveys such as *Specialist Periodical Reports*, and compilations of symposia proceedings are omitted.

This installment of Recent Reviews covers principally the early part of the 2004 literature. Previous installment: *J. Org. Chem.* **2004**, 69(7), 2642–50.

Supporting Information Available: A file containing this Recent Review compilation in Microsoft Word and the data in rtf and Endnote format. This material is available free of charge via the Internet at <http://pubs.acs.org>.

Regularly Issued Journals and Series Volumes

Accounts of Chemical Research

1. Tokitoh, N. New Progress in the Chemistry of Stable Metallaaromatic Compounds of Heavier Group 14 Elements. **2004**, 37(2), 86–94.

2. Bini, R. Laser-Assisted High-Pressure Chemical Reactions. **2004**, 37(2), 95–101.

3. Cordova, A. The Direct Catalytic Asymmetric Mannich Reaction. **2004**, 37(2), 102–12.

4. Cacciapaglia, R.; Di Stefano, S.; Mandolini, L. Effective Molarities in Supramolecular Catalysis of Two-Substrate Reactions. **2004**, 37(2), 113–22.

5. Belda, O.; Moberg, C. Molybdenum-Catalyzed Asymmetric Allylic Alkylations. **2004**, 37(3), 159–67.

6. Leung, P.-H. Asymmetric Synthesis and Organometallic Chemistry of Functionalized Phosphines Containing Stereogenic Phosphorus Centers. **2004**, 37(3), 169–77.

7. Fourmigue, M. Paramagnetic Cp/Dithiolene Complexes as Molecular Hinges: Interplay of Metal/Ligand Electronic Delocalization and Solid-State Magnetic Behavior. **2004**, 37(3), 179–86.

8. Weng, Z.; Goh, L. Y. Homolytic Cleavage and Aggregation Processes in Cyclopentadienylchromium Chemistry. **2004**, 37(3), 187–99.

9. Pandey, G.; Gadre, S. R. Generation and Mesolytic Dynamics of Organoselenane and Selenosilane Radical Ions: Development of Mechanistically Interesting and Synthetically Useful Chemistry. **2004**, 37(3), 201–10.

10. Olah, G. A.; Klumpp, D. A. Superelectrophilic Solvation. **2004**, 37(4), 211–20.

11. Mueller, P. Asymmetric Transfer of Carbenes with Phenylodonium Ylides. **2004**, 37(4), 243–51.

Advanced Synthesis and Catalysis

12. Fokin, A. A.; Schreiner, P. R. Metal-Free, Selective Alkane Functionalizations. **2003**, 345(9–10), 1035–52.

13. Kakiuchi, F.; Chatani, N. Catalytic Methods for C–H Bond Functionalization: Application in Organic Synthesis. **2003**, 345(9–10), 1077–101.

14. Kim, S. Free Radical-Mediated Acylation and Carboxylation Reactions. **2004**, 346(1), 19–32.

Advances in Organometallic Chemistry

15. Tobisch, S. Structure–Reactivity Relationships in the Cyclo-Oligomerization of 1,3-Butadiene Catalyzed by Zerovalent Nickel Complexes. **2003**, 49, 167–224.

Advances in Physical Organic Chemistry

16. Maran, F.; Wayner, D. D. M.; Workentin, M. S. Kinetics and Mechanism of the Dissociative Reduction of C–X and X–X Bonds (X = O, S). **2001**, 36, 85–166.

17. Novak, M.; Rajagopal, S. N-Arylnitrenium Ions. **2001**, 36, 167–254.

18. Gritsan, N. P.; Platz, M. S. Kinetics and Spectroscopy of Substituted Phenylnitrenes. **2001**, 36, 255–304.

19. Paddon-Row, M. N. Orbital Interactions and Long-Range Electron Transfer. **2003**, 38, 1–85.

20. Wiest, O.; Oxgaard, J.; Saettel, N. J. Structure and Reactivity of Hydrocarbon Radical Cations. **2003**, *38*, 87–109.

21. Zipse, H. Charge Distribution and Charge Separation in Radical Rearrangement Reactions. **2003**, *38*, 111–30.

22. Strassner, T. Computational Studies of Alkene Oxidation Reactions by Metal-Oxo Compounds. **2003**, *38*, 131–60.

23. Gao, J.; Garcia-Viloca, M.; Poulsen, T. D.; Mo, Y. Solvent Effects, Reaction Coordinates, and Reorganization Energies on Nucleophilic Substitution Reactions in Aqueous Solution. **2003**, *38*, 161–81.

Angewandte Chemie, International Edition in English

24. Sewald, N. Synthetic Routes Towards Enantiomerically Pure β -Amino Acids. **2003**, *42*(47), 5794–5.

25. Prakash, G. K. S.; Etkorn, M. Direct Oxidation of Azides to Nitro Compounds. **2004**, *43*(1), 26–8.

26. Burke, M. D.; Schreiber, S. L. A Planning Strategy for Diversity-Oriented Synthesis. **2004**, *43*(1), 46–58.

27. De La Torre, M. C.; Sierra, M. A. Recent Achievements in Biomimetic Organic Synthesis. Comments. **2003**, *43*(2), 160–81.

28. Ramon, D. J.; Yus, M. Chiral Tertiary Alcohols Made by Catalytic Enantioselective Addition of Unreactive Zinc Reagents to Poorly Electrophilic Ketones? **2004**, *43*(3), 284–7.

29. Berger, R. Do Heavy Nuclei See Light at the End of the Tunnel? **2004**, *43*(4), 398–401.

30. Bandini, M.; Melloni, A.; Umani-Ronchi, A. New Catalytic Approaches in the Stereoselective Friedel–Crafts Alkylation Reaction. **2004**, *43*(5), 550–6.

Australian Journal of Chemistry

31. Scott, A. Oxazolines as Directing Agents in the Nucleophilic Addition to Naphthalenes. **2003**, *56*(9), 953.

32. Dias, J. R. Valence-Bond and Huckel Molecular Orbital Diradicals—Alternant Versus Nonalternant Effect. **2003**, *56*(12), 1225–32.

Chemical Reviews

33. Seco, J. M.; Quinoa, E.; Riguera, R. The Assignment of Absolute Configuration by NMR. **2004**, *104*(1), 17–117.

34. Taillefumier, C.; Chapleur, Y. Synthesis and Uses of Exo-Glycols. **2004**, *104*(1), 263–92.

35. Laursen, J. B.; Nielsen, J. Phenazine Natural Products: Biosynthesis, Synthetic Analogues, and Biological Activity. **2004**, *104*(3), 1663–85.

36. Pu, L. Fluorescence of Organic Molecules in Chiral Recognition. **2004**, *104*(3), 1687–716.

Chemical Society Reviews

37. Blanco-Urgoiti, J.; Anorbe, L.; Perez-Serrano, L.; Dominguez, G.; Perez-Castells, J. The Pauson–Khand

Reaction, A Powerful Synthetic Tool for the Synthesis of Complex Molecules. **2004**, *33*(1), 32–42.

Chemistry and Industry

38. Mittoo, S.; Bradley, M. Combichem: Beads of Light. **2003**, (18), 16–7.

Chemistry—A European Journal

39. Jas, G.; Kirschning, A. Continuous Flow Techniques in Organic Synthesis. **2003**, *9*(23), 5708–23.

40. Poli, R. High Oxidation State Organometallic Chemistry in Aqueous Media: New Opportunities for Catalysis and Electrocatalysis. **2004**, *10*(2), 332–41.

Chemistry of Heterocyclic Compounds

41. Shvekhgeimer, M. G. A. Methods for the Synthesis of 3,4–2H-Dihydropyrroles (Δ 1-Pyrrolines) and Their Chemical Transformations. (Review). **2003**, *39*(4), 405–48.

42. Skvortsov, I. M. Investigations on 1-Azabicyclic Compounds. 25. Stereochemistry, Hydrogen Bonds, and Gas–Liquid Chromatography of Pyrrolizidine Alcohols. **2003**, *39*(4), 493–503.

43. Laishevsev, I. P.; Kashulin, I. A.; Taidakov, I. V.; Bagrov, V. V.; Nifant'ev, I. E. Cyclopentadienes Annulated with Five-Membered Heterocycles: Methods of Synthesis, Heteroorganic Derivatives, and Synthetic Precursors. (Review). **2003**, *39*(5), 553–86.

44. Morzherin, Y. Y.; Glukhareva, T. V.; Bakulev, V. A. Rearrangements and Transformations of 1,2,3-Thiadiazoles in Organic Synthesis (Review). **2003**, *39*(6), 679–706.

45. Abele, E.; Abele, R.; Lukevics, E. Pyridine Oximes. Synthesis, Reactions, and Biological Activity (Review). **2003**, *39*(7), 825–65.

46. Kharchenko, V. G.; Markova, L. I.; Fedotova, O. V.; Pchelintseva, N. V. Reactions of 1,5-Diketones with Ammonia and Its Derivatives (Review). **2003**, *39*(9), 1121–41.

CHEMTRACTS: Organic Chemistry

47. Preston, A. J.; Parquette, J. R. A Pyridylsilyl Group Expands the Scope of the Intermolecular Pauson–Khand Reactions. **2003**, *16*(7), 435–8.

48. Thompson, C. F. Catalytic Enantioselective Synthesis of β 2-Amino Acids. **2003**, *16*(9), 505–10.

49. Hughes, C. C.; Trauner, D. Direct Catalytic Asymmetric Amination of Aldehydes: Synthesis of Evans Oxazolidinones and α -Amino Acids. **2003**, *16*(9), 511–7.

50. Hooley, R. J.; Lee, C. A Quest for Better Substrates and Catalysts in Arylation Reactions: Iron-Catalyzed Cross-Coupling of Grignard Reagents with Aryl Chlorides, Tosylates, and Triflates. **2003**, *16*(9), 518–26.

51. Steinhuebel, D. (π -Allyl) Palladium Complexes Bearing Diphosphinidenecyclobutene Ligands (DPCD): Highly Active Catalysts for Direct Conversion of Allylic Alcohols. **2003**, *16*(9), 534–6.

52. Rovis, T. Metal and Nonmetal Catalysts for Carbon–Carbon Bond-Forming Reactions Leading to Desymmetrized 1,4-Dicarbonyl Compounds. **2003**, *16*(9), 542–53.

53. Jang, H.-Y.; Huddleston, R. R.; Krische, M. J. Nucleophilic Activation of Enones via Homogeneous Catalytic Hydrogenation: Catalytic Reductive C–C Bond Formation under Hydrogenation Conditions. **2003**, *16*(9), 554–9.

54. Gilbertson, S. R. Parallel and Rational Approaches to Catalyst Development. **2003**, *16*(9), 560–6.

55. Evans, P. A.; Leahy, D. K. Recent Developments in Rhodium-Catalyzed Allylic Substitution and Carbocyclization Reactions. **2003**, *16*(9), 567–78.

56. Murry, J. A.; Frantz, D.; Soheili, A.; Tillyer, R.; Grabowski, E. J. J.; Reider, P. J. Thiazolium-Catalyzed Cross-Coupling of Aldehydes with Acylimines: A New Method for the Synthesis of α -Amidoketones. **2003**, *16*(9), 579–86.

57. Cole, K. P.; Hsung, R. P. Synthetic Approaches to Phomactin A. **2003**, *16*(14), 811–8.

58. Casiraghi, G.; Zanardi, F.; Auzzas, L.; Appendino, G. Isopavines as a New Class of Morphinomimetics. **2003**, *16*(14), 830–7.

59. Luo, Z.-B.; Dai, L.-X. Novel Small Organic Molecules for a Highly Enantioselective Direct Aldol Reaction. **2003**, *16*(14), 843–7.

Collection of Czechoslovak Chemical Communications

60. Beletskaya, I. P.; Cheprakov, A. V. Transition Metal Complex Catalysis in Fine Organic Synthesis. A Personal Account. **2003**, *68*(10), 1904–13.

Coordination Chemistry Reviews

61. Wedge, T. J.; Hawthorne, M. F. Multidentate Carborane-Containing Lewis Acids and Their Chemistry: Mercuracarborands. **2003**, *240*(1–2), 111–28.

62. Hyeon, J.-Y.; Edelman, F. T. Lanthanides and Actinides: Annual Survey of Their Organometallic Chemistry Covering the Year 1997. **2003**, *241*(1–2), 249–72.

63. Richmond, M. G. Annual Survey of Organometallic Metal Cluster Chemistry for the Year 2001. **2003**, *241*(1–2), 273–94.

64. Salzer, A. Chiral Mono- and Bidentate Ligands Derived from Chromium Arene Complexes—Synthesis, Structure and Catalytic Applications. **2003**, *242*(1–2), 59–72.

65. Agbossou-Niedercorn, F.; Suisse, I. Chiral Amino-phosphine Phosphinite Ligands and Related Auxiliaries. Recent Advances in Their Design, Coordination Chemistry, and Use in Enantioselective Catalysis. **2003**, *242*(1–2), 145–58.

Current Medicinal Chemistry

66. Venkatesan, N.; Kim, S. J.; Kim, B. H. Novel Phosphoramidite Building Blocks in Synthesis and Applications Toward Modified Oligonucleotides. **2003**, *10*(19), 1973–91.

67. Karst, N. A.; Linhardt, R. J. Recent Chemical and Enzymatic Approaches to the Synthesis of Glycosaminoglycan Oligosaccharides. **2003**, *10*(19), 1993–2031.

68. Macmillan, D.; Daines, A. M. Recent Developments in the Synthesis and Discovery of Oligosaccharides and

Glycoconjugates for the Treatment of Disease. **2003**, *10*(24), 2733–73.

Current Organic Chemistry

69. Wakahara, T.; Kako, M.; Maeda, Y.; Akasaka, T.; Kobayashi, K.; Nagase, S. Synthesis and Characterization of Cyclic Silicon Compounds of Fullerenes. **2003**, *7*(10), 927–43.

70. Schmuck, C.; Geiger, L. Carboxylate Binding by Guanidiniocarbonyl Pyrroles: From Self-Assembly to Peptide Receptors. **2003**, *7*(14), 1485–502.

71. Sanford, A. R.; Gong, B. Evolution of Helical Foldamers. **2003**, *7*(16), 1649–59.

72. Fringuelli, F.; Piermatti, O.; Pizzo, F.; Vaccaro, L. Indium Salt-Promoted Organic Reactions. **2003**, *7*(16), 1661–89.

73. Mahrwald, R. The Aldol-Tishchenko Reaction: A Tool in Stereoselective Synthesis. **2003**, *7*(17), 1713–23.

74. Vicario, J. L.; Badia, D.; Carrillo, L.; Etxebarria, J. α -Amino Acids and Derivatives in the Asymmetric Synthesis of Tetrahydroisoquinoline Alkaloids. **2003**, *7*(18), 1775–92.

75. Cai, X.; Dass, C. Conformational Analysis of Proteins and Peptides. **2003**, *7*(18), 1841–54.

76. Iglesias, E. Application of Organized Microstructures to Study Keto–Enol Equilibrium of β -Dicarbonyl Compounds. **2004**, *8*(1), 1–24.

77. Liu, Y.; Han, B.-h.; Zhang, H.-y. Spectroscopic Studies on Molecular Recognition of Modified Cyclodextrins. **2004**, *8*(1), 35–46.

78. Zhu, S. Z.; He, P. Study on the Fluorine-Containing Reactive Intermediates and Their Application in the Organic Synthesis. **2004**, *8*(2), 97–112.

79. Ramon, D. J.; Yus, M. Enantioselective Synthesis of Oxygen-, Nitrogen-, and Halogen-Substituted Quaternary Carbon Centers. **2004**, *8*(2), 149–83.

80. Toshima, K. Synthetic Studies on V-ATPase Inhibiting Macrolide Antibiotics. **2004**, *8*(2), 185–210.

81. Stoedeman, M. Scope of Nucleotide Chemistry as Studied by Isothermal Titration Microcalorimetry. **2004**, *8*(3), 243–50.

82. Cheng, Y.; Huang, Z.-T.; Wang, M.-X. Heterocyclic Enamines. The Versatile Intermediates in the Synthesis of Heterocyclic Compounds and Natural Products. **2004**, *8*(4), 325–51.

83. Lee, I.; Sung, D. D. Theoretical and Physical Aspects of Stepwise Mechanisms in Acyl-Transfer Reactions. **2004**, *8*(7), 557–67.

Heterocycles

84. Itskson, N. A.; Rusinov, G. L.; Beresnev, D. G.; Chupakhin, O. N. Modification of Macrocylic Compounds by Azaheterocycles. **2003**, *61*, 593–637.

85. Schulze, B.; Gidon, D.; Siegemund, A.; Rodina, L. L. [$\pi_4 + \pi_2$] Cycloadditions of Isothiazole Derivatives. **2003**, *61*, 639–61.

86. Krow, G. R.; Cannon, K. C. Azabicyclo[2.1.1]-Hexanes. A Review. **2004**, *62*, 877–98.

87. Kumar, D.; Singh, S. P. Structural Revision in Pyrazole Chemistry. **2004**, *63*(1), 145–73.

88. Sliwa, W.; Matusiak, G.; Peszke, J. Glycolurils. **2004**, *63*(2), 419–43.

89. Xu, Y.; Guo, Q.-X. Syntheses of Heterocyclic Compounds under Microwave Irradiation. **2004**, *63*(4), 903–74.

Journal of Fluorine Chemistry

90. Pinkas, J.; Roesky, H. W. Organoaluminum Fluorides. **2003**, *122*(2), 125–50.

Journal of Organometallic Chemistry

91. Gabriele, B.; Salerno, G.; Costa, M.; Chiusoli, G. P. Recent Developments in the Synthesis of Heterocyclic Derivatives by PdI₂-Catalyzed Oxidative Carbonylation Reactions. **2003**, *687*(2), 219–28.

Journal of Physical Organic Chemistry

92. Nurminen, E.; Loennberg, H. Mechanisms of the Substitution Reactions of Phosphoramidites and Their Congeners. **2004**, *17*(1), 1–17.

Journal of the Brazilian Chemical Society

93. Abreu, P. M.; Branco, P. S. Natural Product-Like Combinatorial Libraries. **2003**, *14*(5), 675–712.

Natural Product Reports

94. Cirila, A.; Mann, J. Combretastatins. From Natural Products to Drug Discovery. **2003**, *20*(6), 558–64.

95. Jin, Z. Muscarine, Imidazole, Oxazole, and Thiazole Alkaloids. **2003**, *20*(6), 584–605.

96. Jin, Z. Amaryllidaceae and Sceletium Alkaloids. **2003**, *20*(6), 606–14.

97. Garson, M. J.; Simpson, J. S. Marine Isocyanides and Related Natural Products. Structure, Biosynthesis and Ecology. **2004**, *21*(1), 164–79.

Organic Preparations and Procedures International

98. Garcia, G. V.; Nudelman, N. S. Tandem Reactions Involving Organolithium Reagents. A Review. **2003**, *35*(5), 445,447–500.

Photochemistry

99. Horspool, W. M. Photolysis of Carbonyl Compounds. **2003**, *34*, 9–27.

100. Horspool, W. M. Photochemistry of Alkenes, Alkynes and Related Compounds. **2003**, *34*, 69–109.

101. Gilbert, A. Photochemistry of Aromatic Compounds. **2003**, *34*, 111–42.

102. Gilbert, A. Photo-Reduction and -Oxidation. **2003**, *34*, 143–68.

103. Dunkin, I. R. Photoelimination. **2003**, *34*, 169–96.

Russian Chemical Reviews

104. Shpigun, O. A.; Ananieva, I. A.; Budanova, N. Y.; Shapovalova, E. N. Use of Cyclodextrins for Separation of Enantiomers. **2003**, *72*(12), 1035–54.

105. Berezin, B. D.; Romyantseva, S. V.; Moryganov, A. P.; Berezin, M. B. Chemical Transformations of Chlorophyll and its Application in the Design of a New Generation of Environmentally Safe Dyes. **2004**, *73*(2), 185–94.

106. Shvartsberg, M. S.; Barabanov, I. I.; Fedenok, L. G. Acetylenic Derivatives of Quinones. **2004**, *73*(2), 161–84.

107. Solovieva, A. B.; Timashev, S. F. Catalyst Systems Based on Immobilised Porphyrins and Metalloporphyrins. **2003**, *72*(11), 965–84.

108. Antonovskii, V. L.; Khursan, S. L. Thermolysis of Organic Peroxides in Solution. **2003**, *72*(11), 939–63.

Russian Journal of Organic Chemistry

109. Reetz, M. T. Chiral Monophosphites and Monophosphonites as Ligands in Asymmetric Transition Metal Catalysis. **2003**, *39*(3), 392–6.

110. Koldobskii, G. I.; Kharbash, R. B. 2-Substituted and 2,5-Disubstituted Tetrazoles. **2003**, *39*(4), 453–70.

111. Volcho, K. P.; Salakhutdinov, N. F.; Tolstikov, A. G. Metal Complexes in Asymmetric Oxidation of Sulfides. **2003**, *39*(11), 1537–52.

Sulfur Reports

112. Schukat, G.; Fanghaenel, E. Synthesis, Reactions, and Selected Physico-Chemical Properties of 1,3- and 1,2-Tetrachalcogenafulvalenes. **2003**, *24*(1–2), 1–190.

Synlett

113. Fairbanks, A. J. Intramolecular Aglycon Delivery (IAD): The Solution to 1,2-Cis Stereocontrol for Oligosaccharide Synthesis? **2003**, (13), 1945–58.

114. Barman, D. C. Gallium Trichloride. **2003**, (15), 2440–1.

115. Fresneda, P. M.; Molina, P. Application of Iminophosphorane-Based Methodologies for the Synthesis of Natural Products. **2004**, (1), 1–17.

116. Begue, J.-P.; Bonnet-Delpon, D.; Crousse, B. Fluorinated Alcohols: A New Medium for Selective and Clean Reaction. **2004**, (1), 18–29.

117. Chhibber, M. Potassium Fluoride on Alumina (KF/Al₂O₃). **2004**, (1), 197–8.

118. Nishimura, T.; Uemura, S. Novel Palladium Catalytic Systems for Organic Transformations. **2004**, (2), 201–16.

Synthesis—Stuttgart

119. Chiron, J.; Galy, J.-P. Reactivity of the Acridine Ring. A Review. **2004**, (3), 313–25.

120. Antonioti, S.; Dunach, E. Epoxide Oxidations. A Valuable Tool in Organic Synthesis. **2003**, (18), 2753–62.

121. Sommer, T. J. β -Oxidation of α,β -Unsaturated Carbonyl Compounds. **2004**, (2), 161–201.

Tetrahedron

122. Hamad Elgazwy, A.-S. S. The Chemistry of Isothiazoles. **2003**, *59*(38), 7445–63.

123. Clemente, D. A. 26 Space Group Changes and 6 Crystallographic Puzzles Found in Tetrahedron Journals. **2003**, *59*(42), 8445–55.

124. Atherton, J. C. C.; Jones, S. Diels–Alder Reactions of Anthracene, 9-Substituted Anthracenes and 9,10-Disubstituted Anthracenes. **2003**, *59*(46), 9039–57.

125. Kagan, H. B. Twenty-Five Years of Organic Chemistry with Diiodosamarium: An Overview. **2003**, *59*(52), 10351–72.

126. Badham, N. F. Homologation of Ketones into Carboxylic Acids. **2004**, *60*(1), 11–42.

127. Cooper, N. J.; Knight, D. W. The Reverse Cope Cyclization: A Classical Reaction Goes Backwards. **2004**, *60*(2), 243–69.

128. Prajapati, D.; Gohain, M. Recent Advances in the Application of Supercritical Fluids for Carbon–Carbon Bond Formation in Organic Synthesis. **2004**, *60*(4), 815–33.

129. Ballini, R.; Petrini, M. Recent Synthetic Developments in the Nitro to Carbonyl Conversion (NEF Reaction). **2004**, *60*(5), 1017–47.

130. Dawood, K. M. Electrolytic Fluorination of Organic Compounds. **2004**, *60*(7), 1435–51.

131. Buffat, M. G. P. Synthesis of Piperidines. **2004**, *60*(8), 1701–29.

132. Han, S.-Y.; Kim, Y.-A. Recent Development of Peptide Coupling Reagents in Organic Synthesis. **2004**, *60*(11), 2447–67.

Tetrahedron: Asymmetry

133. Boiadjev, S. E.; Lightner, D. A. Optical Activity and Stereochemistry of Linear Oligopyrroles and Bile Pigments. **1999**, *10*(4), 607–55.

134. Chung, C. W. Y.; Toy, P. H. Chiral Auxiliaries in Polymer-Supported Organic Synthesis. **2004**, *15*(3), 387–99.

Topics in Catalysis

135. Thomas, J. M. On the Nature of Isolated Active Sites in Open-Structure Catalysts for the Aerial Oxidation of Alkanes. **2001**, *15*(2–4), 85–91.

136. Grasselli, R. K. Genesis of Site Isolation and Phase Cooperation in Selective Oxidation Catalysis. **2001**, *15*(2–4), 93–101.

137. Andersson, A.; Hansen, S.; Wickman, A. The Importance of Site Isolation and Phase Cooperation in Propane Ammonoxidation on Rutile-Type Vanadia Catalysts. **2001**, *15*(2–4), 103–10.

138. Volta, J.-C. Site Isolation for Light Hydrocarbons Oxidation. **2001**, *15*(2–4), 121–9.

139. Bordes, E. Synergistic Effects in Selective Oxidation Catalysis: Does Phase Cooperation Result in Site Isolation? **2001**, *15*(2–4), 131–7.

140. Nieto, J. M. L. Microporous and Mesoporous Materials with Isolated Vanadium Species as Selective Catalysts in the Gas-Phase Oxidation Reactions. **2001**, *15*(2–4), 189–94.

141. Schlogl, R.; Knop-Gericke, A.; Havecker, M.; Wild, U.; Frickel, D.; Ressler, T.; Jentoft, R. E.; Wienold, J.; Mestl, G.; Blume, A.; Timpe, O.; Uchida, Y. In Situ Analysis of Metal-Oxide Systems used for Selective Oxidation Catalysis: How Essential is Chemical Complexity? **2001**, *15*(2–4), 219–28.

142. Ono, T.; Ogata, N.; Numata, H.; Miyaryo, Y. A Study of Active Sites for Alkene and Alkane Oxidation over Mo and V Mixed Oxide Catalysts using ¹⁸⁰Tracer and Raman Spectroscopy. **2001**, *15*(2–4), 229–34.

143. Klier, K. The Transition State in Heterogeneous Catalysis. **2002**, *18*(3–4), 141–56.

144. Somorjai, G. A.; McCrea, K. R.; Zhu, J. Active Sites in Heterogeneous Catalysis: Development of Molecular Concepts and Future Challenges. **2002**, *18*(3–4), 157–66.

145. Blaser, H.-U.; Brieden, W.; Pugin, B.; Spindler, F.; Studer, M.; Togni, A. Solvias Josiphos Ligands: From Discovery to Technical Applications. **2002**, *19*(1), 3–16.

146. Von Arx, M.; Mallat, T.; Baiker, A. Asymmetric Hydrogenation of Activated Ketones on Platinum: Relevant and Spectator Species. **2002**, *19*(1), 75–87.

147. Ojima, I.; Moralee, A. C.; Vassar, V. C. Recent Advances in Rhodium-Catalyzed Cyclization Reactions. **2002**, *19*(1), 89–99.

148. Zapf, A.; Beller, M. Fine Chemical Synthesis with Homogeneous Palladium Catalysts: Examples, Status and Trends. **2002**, *19*(1), 101–9.

149. Misono, M. Selective Oxidation of Butanes. Toward Green/Sustainable Chemistry. **2002**, *21*(1–3), 89–96.

150. Barteau, M. A. New Perspectives on Direct Heterogeneous Olefin Epoxidation. **2003**, *22*(1–2), 3–8.

151. Buijs, W. Challenges in Oxidation Catalysis. **2003**, *24*(1–4), 73–8.

152. Besson, M.; Pinel, C. Diastereoselective Heterogeneous Catalytic Hydrogenation of Aromatic or Heteroaromatic Compounds. **2003**, *25*(1–4), 43–61.

153. Schulz, H. Major and Minor Reactions in Fischer–Tropsch Synthesis on Cobalt Catalysts. **2003**, *26*(1–4), 73–85.

154. Biermann, U.; Metzger, J. O. Catalytic C,C-Bond Forming Additions to Unsaturated Fatty Compounds. **2004**, *27*(1–4), 119–30.

Topics in Stereochemistry

155. Silvestri, M. G.; Desantis, G.; Mitchell, M.; Wong, C.-H. Asymmetric Aldol Reactions Using Aldolases. **2003**, *23*, 267–342.

Contributed Volumes

Organic Synthesis Highlights. Volume V. Schmalz, H.-G., Wirth, T., Eds., Wiley-VCH Verlag: Weinheim, Germany, 2003.

156. Arend, M.; Wang, X. Asymmetric Catalytic Aminoalkylations: New Powerful Methods for the Enan-

tioselective Synthesis of Amino Acid Derivatives, Mannich Bases, and Homoallylic Amines.

157. Groeger, H.; Wilken, J.; Berkessel, A. Simple Amino Acids and Short-Chain Peptides as Efficient Metal-Free Catalysts in Asymmetric Synthesis.

158. Seitz, O. The Chemical Total Synthesis of Proteins.

159. Diederichsen, U.; Wagner, T. Solid-Phase Synthesis of Oligosaccharides.

Monographs

160. Buncl, E.; Dust, J. M. Carbanion Chemistry: Structures and Mechanisms. ACS: Washington, DC, 2003.

161. Clark, J. S.; Ed. Nitrogen, Oxygen and Sulfur Ylide Chemistry: A Practical Approach in Chemistry. Oxford University Press: Oxford, U.K., 2002.

162. Csizmadia, I.; Penke, B.; Toth, G. The Role of Chemistry in the Evolution of Molecular Medicine. Elsevier: Oxford, U.K., 2004.

163. Gajewski, J. Hydrocarbon Thermal Isomerizations (CD Book). Academic Press: Oxford, U.K., 2004.

164. Hamai, S.; Nakamura, A. Inclusion Complexes of Cyclodextrins in Aqueous Solutions. [In *Handbook of Photochemistry and Photobiology*. **2003**, 3] Nalwa, H. S., Ed., American Scientific Publishers: Stevenson Ranch, CA, 2003.

165. Hempel, G.; Wilhelms, W. Drug Monitoring and Clinical Chemistry. Vol. 5. Elsevier: Oxford, U.K., 2004.

166. Leitner, W. Fluorous Phases and Compressed Carbon Dioxide as Alternative Solvents for Chemical Synthesis: A Comparison. [In *Green Chemistry Using Liquid and Supercritical Carbon Dioxide*. **2003**, 81–102] Desimone, J. M., Tumas, W., Eds., Oxford University Press: New York, 2003.

167. Nakamura, A.; Ueyama, N.; Yamaguchi, K.; Eds. Organometallic Conjugation: Structures, Reactions and

Functions of d–d and d–P Conjugated Systems. [In: *Springer Ser. Chem. Phys.*, **2002**; 73]. Springer-Verlag: Berlin, Germany, 2002.

168. Noel, J.-P.; Loreau, O. Synthesis of Labeled Isomers. [In *Advances in Conjugated Linoleic Acid Research*. **2003**, 2.] Sebedio, J.-L., Christie, W. W., Adolf, R., Eds., AOCs Press: Champaign, IL, 2003.

169. Screttas, C. G.; Steele, B. R.; Eds. Perspectives in Organometallic Chemistry. Royal Society of Chemistry: Cambridge, U.K., 2003.

170. Sharman, W. M.; Van Lier, J. E. Synthesis of Phthalocyanine Precursors. [In *Porphyrim Handbook*. **2003**, 15.] Kadish, K. M., Smith, K. M., Guillard, R., Eds., Elsevier Science: San Diego, CA, 2003.

171. Speicher, D. Proteome Analysis. Interpreting the Genome. Elsevier Science: Oxford, U.K., 2004.

172. Tius, M. A. Cryptophycin Synthesis. [In *Handbook of Environmental Chemistry*. **2003**, 3.] Gribble, G. W., Ed., Springer: Berlin, Germany, 2003.

173. Wermuth, C. G.; De La Fontaine, J. Preparation of Water-Soluble Compounds by Covalent Attachment of Solubilizing Moieties. [In *Practice of Medicinal Chemistry* (2nd ed.), **2003**] Wermuth, C. G., Ed., Elsevier: London, U.K., 2003.

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