

JOC Recent Reviews

Number 75

compiled by Veronica M. Cornel

Department of Chemistry, Reedley College, 339 West Carpenter Avenue, Reedley, California 93654

vmcornel@scccd.org

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 middle part of the 2004 literature. Previous installment: *J. Org. Chem.* **2004**, 69(20), 6957–66.

Supporting Information Available: A file containing this Recent Review compilation in Microsoft Word and the data in plain text that can be imported into Endnote (using Refer style) and Reference Manager databases. 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. Jia, G. Progress in the Chemistry of Metallabenzenes. **2004**, 37(7), 479–86.
2. Houk, K. N.; List, B. Asymmetric Organocatalysis. **2004**, 37(8), 487.
3. Shi, Y. Organocatalytic Asymmetric Epoxidation of Olefins by Chiral Ketones. **2004**, 37(8), 488–96.
4. Yang, D. Ketone-Catalyzed Asymmetric Epoxidation Reactions. **2004**, 37(8), 497–505.
5. O'Donnell, M. J. The Enantioselective Synthesis of α-Amino Acids by Phase-Transfer Catalysis with Achiral Schiff Base Esters. **2004**, 37(8), 506–17.
6. Lygo, B.; Andrews, B. I. Asymmetric Phase-Transfer Catalysis Utilizing Chiral Quaternary Ammonium Salts: Asymmetric Alkylation of Glycine Imines. **2004**, 37(8), 518–25.
7. Ooi, T.; Maruoka, K. Asymmetric Organocatalysis of Structurally Well-Defined Chiral Quaternary Ammonium Fluorides. **2004**, 37(8), 526–33.
8. Enders, D.; Balensiefer, T. Nucleophilic Carbenes in Asymmetric Organocatalysis. **2004**, 37(8), 534–41.
9. Fu, G. C. Asymmetric Catalysis with “Planar-Chiral” Derivatives of 4-(Dimethylamino)pyridine. **2004**, 37(8), 542–7.
10. List, B. Enamine Catalysis is a Powerful Strategy for the Catalytic Generation and Use of Carbanion Equivalents. **2004**, 37(8), 548–57.
11. Allemann, C.; Gordillo, R.; Clemente, F. R.; Cheong, P. H.-Y.; Houk, K. N. Theory of Asymmetric Organoca-

talysis of Aldol and Related Reactions: Rationalizations and Predictions. **2004**, 37(8), 558–69.

12. Saito, S.; Yamamoto, H. Design of Acid–Base Catalysis for the Asymmetric Direct Aldol Reaction. **2004**, 37(8), 570–9.

13. Notz, W.; Tanaka, F.; Barbas, C. F., III. Enamine-Based Organocatalysis with Proline and Diamines: The Development of Direct Catalytic Asymmetric Aldol, Mannich, Michael, and Diels–Alder Reactions. **2004**, 37(8), 580–91.

14. France, S.; Weatherwax, A.; Taggi, A. E.; Lectka, T. Advances in the Catalytic, Asymmetric Synthesis of β-Lactams. **2004**, 37(8), 592–600.

15. Miller, S. J. In Search of Peptide-Based Catalysts for Asymmetric Organic Synthesis. **2004**, 37(8), 601–10.

16. Aggarwal, V. K.; Winn, C. L. Catalytic, Asymmetric Sulfur Ylide-Mediated Epoxidation of Carbonyl Compounds: Scope, Selectivity, and Applications in Synthesis. **2004**, 37(8), 611–20.

17. Tian, S.-K.; Chen, Y.; Hang, J.; Tang, L.; McDaid, P.; Deng, L. Asymmetric Organic Catalysis with Modified Cinchona Alkaloids. **2004**, 37(8), 621–31.

18. Gridnev, I. D.; Imamoto, T. On the Mechanism of Stereoselection in Rh-Catalyzed Asymmetric Hydrogenation: A General Approach for Predicting the Sense of Enantioselectivity. **2004**, 37(9), 633–44.

19. Deubel, D. V.; Frenking, G.; Gisdakis, P.; Herrmann, W. A.; Roesch, N.; Sundermeyer, J. Olefin Epoxidation with Inorganic Peroxides. Solutions to Four

Long-Standing Controversies on the Mechanism of Oxygen Transfer. **2004**, *37*(9), 645–52.

20. Jang, H.-Y.; Krische, M. J. Catalytic C–C Bond Formation via Capture of Hydrogenation Intermediates. **2004**, *37*(9), 653–61.

21. Hong, S.; Marks, T. J. Organolanthanide-Catalyzed Hydroamination. **2004**, *37*(9), 673–86.

22. Wasserman, H. H.; Parr, J. The Chemistry of Vicinal Tricarbonyls and Related Systems. **2004**, *37*(9), 687–701.

23. Braese, S. The Virtue of the Multifunctional Triazene Linkers in the Efficient Solid-Phase Synthesis of Heterocycle Libraries. **2004**, *37*(10), 804–15.

24. Barbero, A.; Pulido, F. J. Allylsilanes and Vinylsilanes from Silylcupration of Carbon–Carbon Multiple Bonds: Scope and Synthetic Applications. **2004**, *37*(10), 816–24.

Advances in Carbohydrate Chemistry and Biochemistry

25. Plante, O. J.; Palmacci, E. R.; Seeberger, P. H. Development of an Automated Oligosaccharide Synthesizer. **2003**, *58*, 35–54.

26. Knirel, Y. A.; Shashkov, A. S.; Tsvetkov, Y. E.; Jansson, P.-E.; Zaehringer, U. 5,7-Diamino-3,5,7,9-tetradeoxy-non-2-ulosonic Acids in Bacterial Glyco-polymers: Chemistry and Biochemistry. **2003**, *58*, 371–417.

Advances in Heterocyclic Chemistry

27. El-Ashry, E.-S. H.; Ibrahim, E.-S. I. Fused Heterocyclo-Quinolines Containing one Nitrogen Atom at Ring Junction: Part 1. Four and Five Membered Heterocyclo-Quinolines. **2003**, *84*, 71–190.

28. Sadimenko, A. P. Organometallic Complexes of Boron, Silicon, and Phosphorus Analogs of Azoles. **2003**, *85*, 1–66.

29. Hermecz, I. Recent Developments in the Chemistry of Pyridooxazines, Pyridothiazines, Pyridodiazines and Their Benzologs. Part 2. **2003**, *85*, 173–285.

30. Sadimenko, A. P. Organometallic Complexes of Pyridines and Benzannulated Pyridines. **2004**, *86*, 293–343.

Advances in Organometallic Chemistry

31. Kost, D.; Kalikhman, I. Hydrazide-Based Hyper-coordinate Silicon Compounds. **2004**, *50*, 1–106.

32. Yoo, B. R.; Jung, I. N. Synthesis of Organosilicon Compounds by New Direct Reactions. **2004**, *50*, 145–77.

33. Bruce, M. I.; Low, P. J. Transition Metal Complexes Containing All-Carbon Ligands. **2004**, *50*, 179–444.

Angewandte Chemie, International Edition in English

34. Marco-Contelles, J. β -Lactam Synthesis by the Kinugasa Reaction. **2004**, *43*(17), 2198–200.

35. Miura, M. Rational Ligand Design in Constructing Efficient Catalyst Systems for Suzuki-Miyaura Coupling. **2004**, *43*(17), 2201–3.

36. Brunner, H. A New Hydrosilylation Mechanism – New Preparative Opportunities. **2004**, *43*(21), 2749–50.

37. Merino, P.; Tejero, T. Organocatalyzed Asymmetric α -Aminoylation of Aldehydes and Ketones – An Efficient Access to Enantiomerically Pure α -Hydroxycarbonyl Compounds, Diols, and Even Amino Alcohols. **2004**, *43*(23), 2995–7.

38. Koehn, M.; Breinbauer, R. The Staudinger Ligation – A Gift to Chemical Biology. **2004**, *43*(24), 3106–16.

39. Graening, T.; Schmalz, H.-G. Total Synthesis of Colchicine in Comparison: A Journey Through 50 Years of Synthetic Organic Chemistry. **2004**, *43*(25), 3230–56.

40. Glorius, F. Chiral Olefin Ligands – New “Spectators” in Asymmetric Catalysis. **2004**, *43*(26), 3364–6.

41. Beller, M.; Seayad, J.; Tillack, A.; Jiao, H. Catalytic Markovnikov and Anti-Markovnikov Functionalization of Alkenes and Alkynes. Recent Developments and Trends. **2004**, *43*(26), 3368–98.

42. Stahl, S. S. Palladium Oxidase Catalysis. Selective Oxidation of Organic Chemicals by Direct Dioxygen-Coupled Turnover. **2004**, *43*(26), 3400–20.

43. Gonda, J. The Bellus-Claisen Rearrangement. **2004**, *43*(27), 3516–24.

44. Ajamian, A.; Gleason, J. L. Two Birds with One Metallic Stone: Single-Pot Catalysis of Fundamentally Different Transformations. **2004**, *43*(29), 3754–60.

45. Rosenthal, U. Stable Cyclopentynes – Made by Metals? **2004**, *43*(30), 3882–7.

46. Montgomery, J. Nickel-Catalyzed Reductive Cyclizations and Couplings. **2004**, *43*(30), 3890–908.

Chemical Reviews

47. Kovbasyuk, L.; Kraemer, R. Allosteric Supramolecular Receptors and Catalysts. **2004**, *104*(6), 3161–87.

48. Zuman, P. Reactions of Ortho-Phthalaldehyde with Nucleophiles. **2004**, *104*(7), 3217–38.

49. Gowenlock, B. G.; Richter-Addo, G. B. Preparations of C-Nitroso Compounds. **2004**, *104*(7), 3315–40.

50. Chrzanowska, M.; Rozwadowska, M. D. Asymmetric Synthesis of Isoquinoline Alkaloids. **2004**, *104*(7), 3341–70.

51. Edmonds, D. J.; Johnston, D.; Procter, D. J. Samarium(II)-Iodide-Mediated Cyclizations in Natural Product Synthesis. **2004**, *104*(7), 3371–403.

52. Tietze, L. F.; Ila, H.; Bell, H. P. Enantioselective Palladium-Catalyzed Transformations. **2004**, *104*(7), 3453–516.

53. McManus, H. A.; Guiry, P. J. Recent Developments in the Application of Oxazoline-Containing Ligands in Asymmetric Catalysis. **2004**, *104*(9), 4151–202.

Chemical Society Reviews

54. Perez, D.; Guitian, E. Selected Strategies for the Synthesis of Triphenylenes. **2004**, *33*(5), 274–83.

55. Alonso, F.; Yus, M. The $\text{NiCl}_2\text{-Li-Arene}(\text{cat.})$ Combination: A Versatile Reducing Mixture. **2004**, *33*(5), 284–93.

56. Moriuchi, T.; Hirao, T. Highly Ordered Structures of Peptides by Using Molecular Scaffolds. **2004**, *33*(5), 294–301.

57. Lee, J. M.; Na, Y.; Han, H.; Chang, S. Cooperative Multi-Catalyst Systems for One-Pot Organic Transformations. **2004**, *33*(5), 302–12.

58. Atkinson, R. C. J.; Gibson, V. C.; Long, N. J. The Syntheses and Catalytic Applications of Unsymmetrical Ferrocene Ligands. **2004**, *33*(5), 313–28.

59. Chankvetadze, B. Combined Approach Using Capillary Electrophoresis and NMR Spectroscopy for an Understanding of Enantioselective Recognition Mechanisms by Cyclodextrins. **2004**, *33*(6), 337–47.

60. French, A. N.; Bissmire, S.; Wirth, T. Iodine Electrophiles in Stereoselective Reactions: Recent Developments and Synthetic Applications. **2004**, *33*(6), 354–62.

Chemistry – A European Journal

61. Bullock, R. M. Catalytic Ionic Hydrogenations. **2004**, *10*(10), 2366–74.

62. Malinakova, H. C. Chiral Nonracemic Late-Transition-Metal Organometallics with a Metal-Bonded Stereogenic Carbon Atom: Development of New Tools for Asymmetric Organic Synthesis. **2004**, *10*(11), 2636–46.

63. Ding, K.; Du, H.; Yuan, Y.; Long, J. Combinatorial Chemistry Approach to Chiral Catalyst Engineering and Screening: Rational Design and Serendipity. **2004**, *10*(12), 2872–84.

64. Yoshida, M.; Ihara, M. Novel Methodologies for the Synthesis of Cyclic Carbonates. **2004**, *10*(12), 2886–93.

65. Easton, C. J.; Lincoln, S. F.; Barr, L.; Onagi, H. Molecular Reactors and Machines: Applications, Potential, and Limitations. **2004**, *10*(13), 3120–8.

66. Dandapani, S.; Curran, D. P. Separation-Friendly Mitsunobu Reactions: A Microcosm of Recent Developments in Separation Strategies. **2004**, *10*(13), 3130–8.

Chemistry of Heterocyclic Compounds

67. Mochalov, S. S.; Gazzaeva, R. A. Arylcyclopropanes in the Synthesis of Nitrogen- and Oxygen-Containing Heterocycles. (Review). **2003**, *39*(8), 975–88.

68. Abele, E.; Abele, R.; Lukevics, E. Pyrrole Oximes: Synthesis, Reactions, and Biological Activity. Review. **2004**, *40*(1), 1–15.

69. Zalesov, V. V.; Rubtsov, A. E. Synthesis, Structure, and Chemical Properties of N-Substituted 2(3)-Imino-2,3-Dihydrofuran-3(2)-Ones. Review. **2004**, *40*(2), 133–53.

70. Shvekhgeimer, M. G. A. The Pfizeringer Reaction. Review. **2004**, *40*(3), 257–94.

CHEMTRACTS: Organic Chemistry

71. Manyem, S.; Zimmerman, J.; Patil, K.; Sibi, M. P. Tin-Free Radical-Mediated C–C Bond Formations. **2003**, *16*(14), 819–26.

72. Kellogg, R. M. Synthesis of 2,6-Bridged Piperazine-3-Ones by N-Acyliminium Ion Chemistry. **2003**, *16*(14), 838–42.

73. Guo, H.-C.; Ding, K.; Dai, L.-X. A New Principle in Combinatorial Asymmetric Transition-Metal Catalysis: Mixtures of Chiral Monodentate P Ligands. **2004**, *17*(2), 57–66.

74. Risatti, C. A.; Taylor, R. E. Biomimetic Synthesis of Polycyclic Natural Products from Acyclic Precursors. **2004**, *17*(2), 83–91.

75. Iyengar, R.; Gracias, V. Asymmetric Total Synthesis of (+)-Sparteine and the Synthesis of a Readily Accessible (+)-Sparteine Surrogate. **2004**, *17*(2), 92–6.

76. Madec, D.; Poli, G. Unusual Regioselectivities in Palladium-Catalyzed Allylic Substitution. **2004**, *17*(2), 104–14.

Collection of Czechoslovak Chemical Communications

77. Klein, M.; Walenzyk, T.; Koenig, B. Electronic Effects on the Bergman Cyclisation of Enediynes. A Review. **2004**, *69*(5), 945–65.

78. Parola, S.; Desroches, C. Recent Advances in the Functionalizations of the Upper Rims of Thiocalix[4]-Arenes. A Review. **2004**, *69*(5), 966–83.

79. Pulpoka, B.; Vicens, J. 1,3-Alternate Calix[4]Arene: The Sophisticated Conformer of Calix[4]Arene. A Review. **2004**, *69*(6), 1251–81.

80. Svozil, D.; Jungwirth, P.; Havlas, Z. Electron Binding to Nucleic Acid Bases. Experimental and Theoretical Studies. A Review. **2004**, *69*(7), 1395–428.

Coordination Chemistry Reviews

81. Herndon, J. W. The Chemistry of the Carbon-Transition Metal Double and Triple Bond: Annual Survey Covering the Year 2002. **2004**, *248*(1–2), 3–79.

82. Peris, E. From Long-Chain Conjugated Oligomers to Dendrimers: Synthesis and Physical Properties of Phenyl-Ethenyl-Ferrocenyl Containing One- and Two-Dimensional Complexes. **2004**, *248*(3–4), 279–97.

83. Fox, M. A.; Hughes, A. K. Cage C–H···X Interactions in Solid-State Structures of Icosahedral Carboranes. **2004**, *248*(5–6), 457–76.

84. Oh, M.; Reingold, J. A.; Carpenter, G. B.; Sweigart, D. A. Manganese Tricarbonyl Transfer (MTT) Reagents in the Construction of Novel Organometallic Systems. **2004**, *248*(7–8), 561–9.

85. Kudinov, A. R.; Mutseneck, E. V.; Loginov, D. A. (Tetramethylcyclobutadiene)cobalt Chemistry. **2004**, *248*(7–8), 571–85.

86. Jin, G.-X. Advances in the Chemistry of Organometallic Complexes with 1,2-Dichalcogenolato-O–Carborane Ligands. **2004**, *248*(7–8), 587–602.

87. Balazs, L.; Breunig, H. J. Organometallic Compounds with Sb–Sb or Bi–Bi Bonds. **2004**, *248*(7–8), 603–21.

88. Cavell, K. J.; McGuinness, D. S. Redox Processes Involving Hydrocarbylmethyl (N-Heterocyclic Carbene) Complexes and Associated Imidazolium Salts: Ramifications for Catalysis. **2004**, *248*(7–8), 671–81.

89. Ceccon, A.; Santi, S.; Orian, L.; Bisello, A. Electronic Communication in Heterobinuclear Organometallic Complexes Through Unsaturated Hydrocarbon Bridges. **2004**, *248*(7–8), 683–724.

90. Harman, W. D. Conformational and Linkage Isomerizations for Dihapto-Coordinated Arenes and Aromatic Heterocycles: Controlling the Stereochemistry of Ligand Transformations. **2004**, *248*(9–10), 853–66.

- 91.** Richmond, M. G. Annual Survey of Organometallic Metal Cluster Chemistry for the Year 2002. **2004**, 248(9–10), 881–901.

Current Medicinal Chemistry

- 92.** Shuto, S.; Matsuda, A. Chemistry of Cyclic ADP-Ribose and Its Analogs. **2004**, 11(7), 827–45.
- 93.** Gunaga, P.; Moon, H. R.; Choi, W. J.; Shin, D. H.; Park, J. G.; Jeong, L. S. Recent Advances in 4'-Thionucleosides as Potential Antiviral and Antitumor Agents. **2004**, 11(19), 2585–637.

Current Organic Chemistry

- 94.** Quideau, S.; Pouysegu, L.; Deffieux, D. Chemical and Electrochemical Oxidative Activation of Arenol Derivatives for Carbon–Carbon Bond Formation. **2004**, 8(2), 113–48.
- 95.** Sabatino, G.; Chelli, M.; Brandi, A.; Papini, A. M. Analytical Methods for Solid-Phase Peptide Synthesis. **2004**, 8(4), 291–301.
- 96.** Harvey, R. G. Advances in the Synthesis of Polycyclic Aromatic Compounds. **2004**, 8(4), 303–23.
- 97.** Furman, B.; Borsuk, K.; Kaluza, Z.; Lysek, R.; Chmielewski, M. Stereochemistry of [2+2]Cycloaddition of Chlorosulfonyl Isocyanate to Olefins. **2004**, 8(6), 463–73.
- 98.** Corsaro, A.; Chiacchio, U.; Pistara, V.; Romeo, G. Microwave-Assisted Chemistry of Carbohydrates. **2004**, 8(6), 511–38.
- 99.** Taylor, C. M.; Watson, A. J. The Anionic Phospho-Fries Rearrangement. **2004**, 8(7), 623–36.
- 100.** Schmidt, A. Biologically Active Mesomeric Betaines and Alkaloids, Derived from 3-Hydroxypyridine, Pyridin-N-Oxide, Nicotinic Acid and Picolinic Acid: Three Types of Conjugation and Their Consequences. **2004**, 8(8), 653–70.
- 101.** Cruz, A.; Juarez-Juarez, M. Heterocyclic Compounds Derived from Ephedrines. **2004**, 8(8), 671–93.
- 102.** Milan, M.; Viktor, M.; Rudolf, K.; Dusan, I. Preparation of Cyclic 1,3-Diketones and Their Exploitation in the Synthesis of Heterocycles. **2004**, 8(8), 695–714.
- 103.** Lavilla, R. Non-Conventional Redox Chemistry of Dihydropyridines and Pyridinium Salts. **2004**, 8(8), 715–37.
- 104.** Phillips, D. L.; Fang, W. H.; Zheng, X.; Li, Y. L.; Wang, D.; Kwok, W. M. Isopolyhalomethanes. Their Formation, Structures, Properties and Cyclopropanation Reactions with Olefins. **2004**, 8(9), 739–55.
- 105.** Zhang, W. Recent Advances in the Synthesis of Biologically Interesting Heterocycles by Intramolecular Aryl Radical Reactions. **2004**, 8(9), 757–80.
- 106.** Guiry, P. J.; Kiely, D. The Development of the Intramolecular Asymmetric Heck Reaction. **2004**, 8(9), 781–94.
- 107.** Honda, E.; Kataoka, T. Chemistry of Selenabenzene and Related Compounds. **2004**, 8(9), 813–25.
- 108.** Arques, A.; Molina, P. Bis(iminophosphoranes) as Useful Building Blocks for the Preparation of Complex Polyaza Ring Systems. **2004**, 8(9), 827–43.

- 109.** De La Hoz, A.; Diaz-Ortiz, A.; Moreno, A. Selectivity in Organic Synthesis under Microwave Irradiation. **2004**, 8(10), 903–18.

- 110.** Gabriele, B.; Salerno, G.; Costa, M.; Chiusoli, G. P. Recent Advances in the Synthesis of Carbonyl Compounds by Palladium-Catalyzed Oxidative Carbonylation Reactions of Unsaturated Substrates. **2004**, 8(10), 919–46.

- 111.** Soriente, A.; De Rosa, M.; Villano, R.; Scettri, A. Recent Advances in Asymmetric Aldol Reaction of Masked Acetoacetic Esters Promoted by Ti(IV)/Binol. A New Methodology, Non-Linear Effects and Autoinduction. **2004**, 8(11), 993–1007.

- 112.** Tanaka, H.; Kuboshii, M. Aluminium as an Electron Pool for Organic Synthesis. Multi-Metal Redox-Promoted Reactions. **2004**, 8(11), 1027–56.

- 113.** Mihovilovic, M. D.; Rudroff, F.; Groetzl, B. Enantioselective Baeyer–Villiger Oxidations. **2004**, 8(12), 1057–69.

- 114.** Yranzo, G. I.; Moyano, E. L. Flash Vacuum Pyrolysis of Isoxazoles, Pyrazoles and Related Compounds. **2004**, 8(12), 1071–88.

- 115.** Gueltekin, M. S.; Celik, M.; Balci, M. Cyclitols. Conduritols and Related Compounds. **2004**, 8(13), 1159–86.

- 116.** Sliwa, W.; Girek, T.; Koziol, J. J. Cyclodextrin Oligomers. **2004**, 8(15), 1445–62.

Current Organic Synthesis

- 117.** Kirsch, G.; Hesse, S.; Comel, A. Synthesis of Five- and Six-Membered Heterocycles Through Palladium-Catalyzed Reactions. **2004**, 1(1), 47–63.

- 118.** Avendano, C.; Menendez, J. C. Synthetic Studies on N-Methylwelwitindolinone C Isothiocyanate (Welwistatin) and Related Substructures. **2004**, 1(1), 65–82.

- 119.** Felpin, F.-X.; Lebreton, J. Synthesis of 2,6-Dialkyl-1,2,5,6-Tetrahydropyridines and Their Applications in Total Synthesis. **2004**, 1(1), 83–109.

- 120.** Sineriz, F.; Thomassigny, C.; Lou, J.-D. Recent Advances in Solvent-Free Oxidation of Alcohols. **2004**, 1(2), 137–54.

- 121.** Szatmari, I.; Fueloep, F. Syntheses and Transformations of 1-(Aminobenzyl)-2-naphthol Derivatives. **2004**, 1(2), 155–65.

- 122.** Spivey, A. C.; Gripton, C. J. G.; Hannah, J. P. Recent Advances in Group 14 Cross-Coupling: Si and Ge-Based Alternatives to the Stille Reaction. **2004**, 1(3), 211–26.

- 123.** Peppe, C. Indium(I) Compounds in Organic Synthesis. **2004**, 1(3), 227–31.

Current Topics in Medicinal Chemistry

- 124.** Breining, S. R. Recent Developments in the Synthesis of Nicotinic Acetylcholine Receptor Ligands. **2004**, 4(6), 609–29.

- 125.** Clarke, D.; Ali, M. A.; Clifford, A. A.; Parratt, A.; Rose, P.; Schwinn, D.; Bannwarth, W.; Rayner, C. M. Reactions in Unusual Media. **2004**, 4(7), 729–71.

- 126.** Gao, Z.-G.; Jacobson, K. A. Partial Agonists for A3 Adenosine Receptors. **2004**, 4(8), 855–62.

- 127.** Press, N. J.; Keller, T. H.; Tranter, P.; Beer, D.; Jones, K.; Faessler, A.; Heng, R.; Lewis, C.; Howe, T.; Gedeck, P.; Mazzoni, L.; Fozard, J. R. New Highly Potent and Selective Adenosine A3 Receptor Antagonists. **2004**, *4*(8), 863–70.

Heteroatom Chemistry

- 128.** Bansal, R. K.; Gupta, N.; Gupta, N. Cycloaddition Reactions of Heterophospholes. **2004**, *15*(3), 271–87.

Journal of Combinatorial Chemistry

- 129.** Maltais, R.; Tremblay, M. R.; Ciobanu, L. C.; Poirier, D. Steroids and Combinatorial Chemistry. **2004**, *6*(4), 443–56.
130. Gaggini, F.; Porcheddu, A.; Reginato, G.; Rodriguez, M.; Taddei, M. Colorimetric Tools for Solid-Phase Organic Synthesis. **2004**, *6*(5), 805–10.

Journal of Fluorine Chemistry

- 131.** Yoneda, N. Advances in the Preparation of Organofluorine Compounds Involving Iodine and/or Iodo Compounds. **2004**, *125*(1), 7–17.
132. Conte, L.; Gambaretto, G. Electrochemical Fluorination: State of the Art and Future Tendencies. **2004**, *125*(2), 139–44.
133. Taylor, R. Why Fluorinate Fullerenes? **2004**, *125*(3), 359–68.
134. Dolensky, B.; Nam, G.; Deng, W.-P.; Narayanan, J.; Fan, J.; Kirk, K. L. Syntheses of Side-Chain Fluorinated Biologically Important Imidazoles and Indoles. **2004**, *125*(4), 501–8.
135. Grobe, J.; Le Van, D. The Chemistry of Fluorine Containing Phosphaalkenes, Arsaaalkenes and Selenocarbonyls. **2004**, *125*(6), 801–21.
136. Tyrra, W.; Naumann, D. Perfluoroorganosilver(I) Compounds. **2004**, *125*(6), 823–30.
137. Lentz, D. Organometallic Chemistry of Fluorinated Propadienes and Butadienes. **2004**, *125*(6), 853–61.
138. Borrmann, T.; Lork, E.; Mews, R.; Stohrer, W.-D. Fluoride Ion Transfer and Stabilization of Reactive Ions. **2004**, *125*(6), 903–16.
139. von Ahsen, S.; Willner, H.; Arguello, G. A. Fluorocarbon Oxy and Peroxy Radicals. **2004**, *125*(7), 1057–70.

Journal of Organometallic Chemistry

- 140.** de Meijere, A.; Kozhushkov, S. I.; Savchenko, A. I. Titanium-Mediated Syntheses of Cyclopropylamines. **2004**, *689*(12), 2033–55.
141. Thoonen, S. H. L.; Deelman, B.-J.; Van Koten, G. Synthetic Aspects of Tetraorganotins and Organotin(IV) Halides. **2004**, *689*(13), 2145–57.
142. Danks, T. N.; Wagner, G. The Chemistry of (1-Azabuta-1,3-diene)tricarbonyliron(0) Complexes. **2004**, *689*(15), 2543–57.

Journal of Physical Organic Chemistry

- 143.** Adam, W.; Diedering, M.; Trofimov, A. V. Intriguing Double-Inversion Stereochemistry in the Denitroge-

nation of 2,3-Diazabicyclo[2.2.1]heptene-type Azoalkanes: A Model Mechanistic Study in Physical Organic Chemistry. **2004**, *17*(8), 643–55.

Journal of the Brazilian Chemical Society

- 144.** Gielen, M. An Overview of Forty Years Organotin Chemistry Developed at the Free Universities of Brussels ULB and VUB. **2003**, *14*(6), 870–7.

Natural Product Reports

- 145.** Draeger, B. Chemistry and Biology of Calystegines. **2004**, *21*(2), 211–23.
146. Somei, M.; Yamada, F. Simple Indole Alkaloids and Those with a Nonrearranged Monoterpene Unit. **2004**, *21*(2), 278–311.
147. Bentley, K. W. β -Phenylethylamines and the Isoquinoline Alkaloids. **2004**, *21*(3), 395–424.

New Journal of Chemistry

- 148.** Buchmeiser, M. R. Recent Advances in the Synthesis of Supported Metathesis Catalysts. **2004**, *28*(5), 549–57.
149. Pineschi, M. Copper-Catalyzed Enantioselective Allylic Alkylation Ring-Opening Reactions of Small-Ring Heterocycles with Hard Alkyl Metals. **2004**, *28*(6), 657–65.
150. Nelson, A. The Development of Strategies and Methods for the Synthesis of Biologically Active Compounds. **2004**, *28*(7), 771–6.

Organic Preparations and Procedures International

- 151.** Hajipour, A. R.; Khoei, S.; Ruoho, A. E. Regeneration of Carbonyl Compounds from Oximes, Hydrazones, Semicarbazones, Acetals, 1,1-Diacetates, 1,3-Dithiolanes, 1,3-Dithianes and 1,3-Oxathiolanes. **2003**, *35*(6), 527–81.
152. Kotali, A.; Harris, P. A. *o*-Diacylbenzenes in Organic Synthesis. A Review. **2003**, *35*(6), 583–601.
153. Merbouh, N.; Bobbitt, J. M.; Brueckner, C. Preparation of Tetramethylpiperidine-1-oxoammonium Salts and Their Use as Oxidants in Organic Chemistry. A Review. **2004**, *36*(1), 3–31.
154. Tejedor, D.; Garcia-Tellado, F. Synthesis and Chemistry of Tetronic Acids. **2004**, *36*(1), 35–59.

Pure and Applied Chemistry

- 155.** Helmchen, G.; Ernst, M.; Paradies, G. Application of Allylic Substitutions in Natural Products Synthesis. **2004**, *76*(3), 495–506.
156. Jun, C.-H.; Lee, J. H. Application of C–H and C–C Bond Activation in Organic Synthesis. **2004**, *76*(3), 577–87.
157. Malachowski, L.; Stair, J. L.; Holcombe, J. A. Immobilized Peptides/Amino Acids on Solid Supports for Metal Remediation. **2004**, *76*(4), 777–87.
158. Karolak-Wojciechowska, J.; Fruzinski, A. Spacer Conformation in Biologically Active Molecules. **2004**, *76*(5), 959–64.

- 159.** Dallinger, D.; Stadler, A.; Kappe, C. O. Solid- and Solution-Phase Synthesis of Bioactive Dihydropyrimidines. **2004**, *76*(5), 1017–24.

Russian Journal of Organic Chemistry

- 160.** Moskvin, A. V.; Reznikova, N. R.; Ivin, B. A. Hydroxypyrimidines Condensation with Carbonyl Compounds. Part II. Hydroxy-, Sulfanyl-, and Aminopyrimidines. **2004**, *40*(2), 143–61.
- 161.** Bukharov, S. V.; Nugumanova, G. N.; Mukmenova, N. A.; Burilov, A. R.; Kasymova, E. M.; Pudovik, M. A.; Konovalov, A. I. Synthesis of Sterically Hindered Phenols on the Basis of 3,5-Di-tert-butyl-4-hydroxybenzyl Acetate. **2004**, *40*(3), 293–300.
- 162.** Koldobskii, G. I.; Hrabalek, A.; Esikov, K. A. 1-Substituted 5-Alkyl(aryl)sulfanyl tetrazoles and Their Derivatives. **2004**, *40*(4), 447–61.

Science

- 163.** Xie, S.-Y.; Gao, F.; Lu, X.; Huang, R.-B.; Wang, C.-R.; Zhang, X.; Liu, M.-L.; Deng, S.-L.; Zheng, L.-S. Capturing the Labile Fullerene[50] as $C_{50}Cl_{10}$. **2004**, *304*(5671), 699.
- 164.** Smith, R. R.; Killelea, D. R.; DelSesto, D. F.; Utz, A. L. Preference for Vibrational over Translational Energy in a Gas-Surface Reaction. **2004**, *304*(5673), 992–5.
- 165.** Kobayashi, J.; Mori, Y.; Okamoto, K.; Akiyama, R.; Ueno, M.; Kitamori, T.; Kobayashi, S. A Microfluidic Device for Conducting Gas–Liquid–Solid Hydrogenation Reactions. **2004**, *304*(5675), 1305–8.
- 166.** Wang, L.; Vysotsky, M. O.; Bogdan, A.; Bolte, M.; Boehmer, V. Multiple Catenanes Derived from Calix[4]-arenes. **2004**, *304*(5675), 1312–4.
- 167.** Miyashita, M.; Sasaki, M.; Hattori, I.; Sakai, M.; Tanino, K. Total Synthesis of Norzoanthamine. **2004**, *305*(5683), 495–9.
- 168.** Bertrand, G. Chemistry: The Modest Undressing of a Silicon Center. **2004**, *305*(5685), 783–5.
- 169.** Jutzi, P.; Mix, A.; Rummel, B.; Schoeller, W. W.; Neumann, B.; Stammler, H.-G. The $(Me_5C_5)Si^+$ Cation: A Stable Derivative of HSi^+ . **2004**, *305*(5685), 849–51.

Sulfur Reports

- 170.** Abu-Yousef, I. A.; Harpp, D. N. New Sulfenyl Chloride Chemistry: Synthesis, Reactions and Mechanisms toward Carbon–Carbon Double Bonds. **2003**, *24*(3), 255–82.
- 171.** Tandon, V. K.; Rai, S. *p*-Toluenesulfonylmethyl Isocyanide: a Versatile Synthon in Organic Chemistry. **2003**, *24*(3), 307–85.

Synlett

- 172.** Das, S. K. Application of Microwave Irradiation in the Synthesis of Carbohydrates. **2004**, *(6)*, 915–32.
- 173.** Byrne, L. A.; Gilheany, D. G. Simple Syntheses of Seven-Membered Rings via an Entropy/Strain Reduction Strategy. **2004**, *(6)*, 933–43.
- 174.** Matyus, P.; Maes, B. U. W.; Riedl, Z.; Hajos, G.; Lemiere, G. L. F.; Tapolsanyi, P.; Monsieurs, K.; Elias,

- O.; Dommis, R. A.; Krajsovsky, G. New Pathways Towards Pyridazino-Fused Ring Systems. **2004**, *(7)*, 1123–39.

- 175.** Miyabe, H.; Ueda, M.; Naito, T. Carbon–Carbon Bond Construction Based on Radical Addition to $C=N$ Bond. **2004**, *(7)*, 1140–57.
- 176.** Geng, X.; Yang, Z.-Q.; Danishefsky, S. J. Synthetic Development of Radicicol and Cycloproparadicicol: Highly Promising Anticancer Agents Targeting Hsp90. **2004**, *(8)*, 1325–33.

- 177.** Belvisi, L.; Colombo, L.; Manzoni, L.; Potenza, D.; Scolastico, C. Design, Synthesis, Conformational Analysis and Application of Azabicycloalkane Amino Acids as Constrained Dipeptide Mimics. **2004**, *(9)*, 1449–71.

- 178.** Bonifacio, V. D. B. Meldrum’s Acid. **2004**, *(9)*, 1649–50.

- 179.** Adak, A. K. Phenyl Dichlorophosphate – A Versatile Reagent. **2004**, *(9)*, 1651–2.

Synthesis—Stuttgart

- 180.** Grasa, G. A.; Singh, R.; Nolan, S. P. Transesterification/Acylation Reactions Catalyzed by Molecular Catalysts. **2004**, *(7)*, 971–85.

- 181.** Gravel, M.; Lachance, H.; Lu, X.; Hall, D. G. Scope and Limitations of the Scandium-Catalyzed Enantioselective Addition of Chiral Allylboronates to Aldehydes. **2004**, *(8)*, 1290–302.

- 182.** Wu, Q.; Simons, C. Synthetic Methodologies for C–Nucleosides. **2004**, *(10)*, 1533–53.

Tetrahedron

- 183.** Pellissier, H. The Glycosylation of Steroids. **2004**, *60*(24), 5123–62.

- 184.** Ranganathan, S.; Muraleedharan, K. M.; Vaish, N. K.; Jayaraman, N. Halo- and Selenolactonization: The Two Major Strategies for Cyclofunctionalization. **2004**, *60*(25), 5273–308.

- 185.** Vizer, S. A.; Yerzhanov, K. B.; Al Quntar, A. A. A.; Dembitsky, V. M. Synthesis of Heterocycles by Carbonylation of Acetylenic Compounds. **2004**, *60*(26), 5499–538.

- 186.** Crouch, R. D. Selective Monodeprotection of Bis-Silyl Ethers. **2004**, *60*(28), 5833–71.

- 187.** Henry, G. D. De Novo Synthesis of Substituted Pyridines. **2004**, *60*(29), 6043–61.

- 188.** Majumdar, K. C.; Basu, P. K.; Mukhopadhyay, P. P. Formation of Five- and Six-Membered Heterocyclic Rings Under Radical Cyclization Conditions. **2004**, *60*(30), 6239–78.

- 189.** Qiu, X.-L.; Meng, W.-D.; Qing, F.-L. Synthesis of Fluorinated Amino Acids. **2004**, *60*(32), 6711–45.

- 190.** Grubbs, R. H. Olefin Metathesis. **2004**, *60*(34), 7117–40.

- 191.** Bunzel, E.; Um, I.-H. The α -Effect and Its Modulation by Solvent. **2004**, *60*(36), 7801–25.

Tetrahedron: Asymmetry

- 192.** Chelucci, G.; Murineddu, G.; Pinna, G. A. Chiral Pyridine N-Oxides: Useful Ligands for Asymmetric Catalysis. **2004**, *15*(9), 1373–89.

- 193.** Jerphagnon, T.; Renaud, J.-L.; Bruneau, C. Chiral Monodentate Phosphorus Ligands for Rhodium-Catalyzed Asymmetric Hydrogenation. **2004**, *15*(14), 2101–11.
- 194.** Dieguez, M.; Pamies, O.; Claver, C. Recent Advances in Rh-Catalyzed Asymmetric Hydroformylation Using Phosphite Ligands. **2004**, *15*(14), 2113–22.
- 195.** Clark, T.; Landis, C. Recent Developments in Chiral Phospholane Chemistry. **2004**, *15*(14), 2123–37.
- 196.** Drexler, H.-J.; Zhang, S.; Sun, A.; Spannenberg, A.; Arrieta, A.; Preetz, A.; Heller, D. Cationic Rh-Bisphosphine-Diolefin Complexes as Precatalysts for Enantioselective Catalysis—What Information do Single-Crystal Structures Contain Regarding Product Chirality? **2004**, *15*(14), 2139–50.

Topics in Current Chemistry

- 197.** Crepy, K. V. L.; Imamoto, T. New P-Chirogenic Phosphine Ligands and Their Use in Catalytic Asymmetric Reactions. **2003**, 229(New Aspects in Phosphorus Chemistry III), 1–40.

- 198.** Taillefer, M.; Cristau, H.-J. New Trends in Ylide Chemistry. **2003**, 229(New Aspects in Phosphorus Chemistry III), 41–73.

- 199.** Tanaka, M. Homogeneous Catalysis for H–P Bond Addition Reactions. **2004**, 232(New Aspects in Phosphorus Chemistry IV), 25–54.

- 200.** Dutasta, J.-P. New Phosphorylated Hosts for the Design of New Supramolecular Assemblies. **2004**, 232(New Aspects in Phosphorus Chemistry IV), 55–91.

- 201.** Michalski, J.; Dabkowski, W. State of the Art. Chemical Synthesis of Biophosphates and Their Analogues via PIII Derivatives. **2004**, 232(New Aspects in Phosphorus Chemistry IV), 93–144.

- 202.** Vioux, A.; le Bideau, J.; Mutin, P. H.; Leclercq, D. Hybrid Organic–Inorganic Materials Based on Organophosphorus Derivatives. **2004**, 232(New Aspects in Phosphorus Chemistry IV), 145–74.

- 203.** Gudat, D. “Zwitterionic Phospholide Derivatives – New Ambiphilic Ligands”. **2004**, 232(New Aspects in Phosphorus Chemistry IV), 175–212.

Monographs

- 204.** Allen, D. W.; Tebby, J. C. Organophosphorus Chemistry. Vol. 33. Royal Society of Chemistry: Cambridge, U.K., 2003.
- 205.** Astruc, D., Ed. Modern Arene Chemistry. Wiley-VCH Verlag: Weinheim, Germany, 2002.
- 206.** Attanasi, O. A.; Spinelli, D., Eds. Reviews and Accounts on Heterocyclic Chemistry. [In: *Targets Heterocycl. Syst.*, **2002**; 6]. Societa Chimica Italiana: Rome, Italy, 2002.
- 207.** Dunkin, I.; Allen, N. S.; Horspool, W. M.; Gilbert, A. Photochemistry. A Review of the Literature Published Between July 2001 and June 2002. Vol. 32. Royal Society of Chemistry: Cambridge, U.K., 2003.

- 208.** Ferrier, R. J. Monosaccharides, Disaccharides and Specific Oligosaccharides. [In: *Carbohydr. Chem.*, **2003**; 34]. Royal Society of Chemistry: Cambridge, U.K., 2003.

- 209.** Mingos, D. M. P., Ed. Supramolecular Assembly via Hydrogen Bonds I. [In: *Struct. Bonding* (Berlin, Ger.), **2004**; 108]. Springer-Verlag: Berlin, Germany, 2004.

- 210.** Mingos, D. M. P., Ed. Supramolecular Assembly via Hydrogen Bonds II. [In: *Struct. Bonding* (Berlin, Ger.), **2004**, 111]. Springer-Verlag: Berlin, Germany, 2004.

- 211.** Miyazaki, T., Ed. Atom Tunneling Phenomena in Physics, Chemistry and Biology. [In: *Springer Ser. At., Opt., Plasma Phys.*, **2004**; 36]. Springer-Verlag: Berlin, Germany, 2004.

- 212.** O’Neil, I. A. Science of Synthesis, Volume 3, Houben-Weyl Methods of Molecular Transformation; Organometallics: Compounds of Groups 12 and 11 (Zn, Cd, Hg, Cu, Ag, Au). Georg Thieme Verlag: Stuttgart, Germany, 2004.

- 213.** Thomas, E. J. Hetarenes and Related Ring Systems Six-Membered Hetarenes with One Chalcogen. [In: *Sci. Synth.*, **2003**; 14]. Georg Thieme Verlag: Stuttgart, Germany, 2003.

- 214.** Ward, M. D., Ed. Comprehensive Coordination Chemistry II, Volume 9: Applications of Coordination Chemistry. Elsevier Ltd.: Oxford, U.K., 2004.

Index

- α -effect, 191
 Acetoacetic esters, aldol condensation, 111
 Acetylenes, silylation, 24
 Acetylenic compounds, carbonylation, 185
 Acid–base catalysis, asymmetric direct aldol reaction, 12
 Adenosine A3 receptor antagonists, 127 agonists, 126
 Alcohols, oxidation, solvent-free, 120
 Aldehydes, allylboronate addition, 181 α -aminoxylation, 37 preparation, solvent-free, 120
 Aldol reaction, titanium BINOL catalyst, 111 intermolecular, organocatalysis, 11
 Alkenes, asymmetric hydrogenation, with Rh, 18 functionalization, 60 hydroamination, 21 oxidative cyclization, with Pd, 42 reduction with $\text{NiCl}_2\text{-Li-arene}$, 55 regioselective functionalization, 41 substitution with alkylarylsulfonyletetrazoles, 162
 Alkenylfuranose, cycloaddition, 97
 Alkyl anthracenylmethyl cinchona alkaloids, 6
 Alkylzinc reagent, selective ring opening allylic substitution, 149
 Alkynes, regioselective functionalization, 41
 Allenes, silylation, 24
 Allenylfuranose cycloaddition, 97
 Allosteric supramolecules, catalysts, 47 receptors, 47
 Allylboronates, camphor-diol, 181
 Allylic substitution, Pd-catalyzed, 76
 Allylsilanes, preparation, 24
 Aluminum, reducing agent, 112
 Amines, kinetic resolution, 9 synthesis, 175
 Amino acids, catalysts, 11 dialkyl, 175 fluorinated, 189 immobilized, ion exchange chromatography, 157 immobilized, metal binding, 157 α , via chiral phase transfer catalyst, 5
 Aminobenzylnaphthols, 121
 Aminopyrimidines, carbonyl condensation, 160
 Aminotetraeoxynulosonic acid, 26
 Analgesics, 68
 Anatoxin-a, 124
 Anti HIV agents, conduritols, 115
 Anticancer agents, 176
 Antidepressive agents, 68
 Antimicrobial agents, 68
 Antimitotic agents, colchicines, 39
 Antitumor agents, organotin, 144 thionucleosides, 93
 Antiviral agents, thionucleoside, 93
 Aporphinoid alkaloids, 147
 Arenes, book, 205 dihapto coordinated, 90 hydroxylated, oxidative activation, 94
 Aromatic heterocycles, dihapto coordinated, 90
 Aromatics, polycyclic, synthesis, 96
 Arsaalkene, fluorinated, 135
 Arylboronic acid, aryl chloride coupling, 35
 Arylcyclopropanes, heterocycle synthesis, 67
 Arylphosphonates, 99
 Atom tunneling, book, 211
 Azabicycloalkane amino acids, 177
 Azabutadiene iron complex, 142
 Azacycles, solid-phase synthesis, 175
 Azoalkanes, bicyclic, denitrogenation, 143
 Bellus Claisen rearrangement, 43
 Benzannulated pyridines, organometallic complexes, 30
 Benzothiopene desulfurization, 84
 Benzylamines, deamination, 179
 Betaines, heterocyclic, mesomeric, 100
 Betti bases, chiral ligands, 121
 Biginelli cyclocondensation libraries, 159
 Bioconjugates, preparation, chemoselective ligation, 38
 Biophosphates, synthesis, 201
 Boron, organometallic complex, 28
 Butadienes, fluorinated, 137
 Calixarene derivatives, conformations, 79
 Calystegines, 145
 Carbenes, nucleophilic, asymmetric catalysis, 8
 Carbocycles, from quinones, 173 preparation, intramolecular Heck reaction, 106 unsaturated, seven membered, 173 from catechols, 173
 Carbohydrates, microwave chemistry, 98, 172
 Carbonates, cyclic, from carbon dioxide, 64
 Carbon–carbon double bond, 170
 Carbon–transition metal double bond, 81
 Carbon–transition metal triple bond, 81
 Carbonyl protecting group, deprotection, 151
 Carbonylation, oxidative, with Pd, 110
 Carboranes, icosahedral, 83
 Cardiovascular agents, 68
 Catalysis, metal, single pot, 44
 Catalysts, multiple, one-pot, 57
 Catenanes, multi-, from calixarenes, 166
 Cavitands, phosphorylated, 200
 C–C bond activation, Rh chelation, 156
 C–C bond formation, from C=N bond, 175 via capture hydrogenation intermediate, 20
 C–C bonds, from chiral, C-transition metal complexes, 62 radical mediated, 71
 C–H bond activation, Rh chelation, 156
 Chalcogens, six-membered rings, book, 213
 Chiral catalyst libraries, 63
 Chlorosulfonyl isocyanate, β -lactam synthesis, 97
 Cinchona alkaloids, asymmetric catalysis, 17 chiral phase transfer catalyst, 5 phase transfer catalyst, 6
 Co-catalyst systems, 57
 Colchicine total synthesis, 39
 Combinatorial asymmetric transition metal catalysis, 73
 Combinatorial chemistry, chiral catalysts, 63 functional group detection, 130 triazene linkers, 23
 Conduritol, 115
 Coordination chemistry, book, 214
 Cyclic ADP-ribose analog, 92
 Cyclitols, 115
 Cycloalkanidine, heterocycle synthesis, 102
 Cyclodextrins, capillary electrophoresis, NMR, 59 enantioselective recognition, 59 molecular modeling, 59 oligomers, 116
 Cyclohexenes, epoxidation, 4
 Cycloproparadicicol anticancer agent, 176
 Cyclopropylamine, via Ti catalyst, 140
 Decamethylsilicocene reaction, proton-transfer reagent, 169
 Deprotection, carbonyl group, 151
 Diacylbenzenes, in synthesis, 152
 Diazino-fused ring systems, 174
 Dibismuthines, 87
 Dieckmann cyclization of glycolyl acetoacetate, 154
 Dienes, silylation, 24
 Difluoropropadienes, 137
 Dihydropyridine, non-biomimetic reactions, 103
 Dihydropyrimidines, solid-phase synthesis, 159
 Diketones, cyclic, heterocycle synthesis, 102
 Dimethylaminopyridine, planar chiral, 9
 Diols, monophosphorylation, 179
 Disaccharide mimetics, C-linked, 150
 Distibines, 87
 Enamine catalysis, carbonyl reactions, 10
 Enamine organocatalysis, 13
 Enediyne, Bergman cyclization, 77
 Ephedra alkaloids, in synthesis, 101
 Ephedra heterocycles, chiral preparation, 101
 Epibatidine analogs, 124
 Epoxidation, asymmetric, 16
 Epoxides, from sulfur ylides, 16
 Erythrinane alkaloids, 147
 Ferrocenes, unsymmetric ligands, 58
 Ferrocenyl oligomers, 82
 Fluoride ion donors, 138
 Fluorination, electrochemical, 132
 Fluorocarbon oxy radicals, 139
 Fullerenes, C_{50} , chlorinated, 163 fluorinated, 133
 Fulvalene bridge, 89
 Glycine imines, alkylation, 6
 Glycopolymers, bacterial, 26
 Glycosyl phosphates, oligosaccharide synthesis, 25

- Heck reaction, intramolecular, 106
 Hemicryptophanes, phosphorylated, 200
 Hetarenes, book, 213
 Heteroannulation, Pd catalyst, 117
 Heterobinuclear organometallic complex, 89
 Heterocumulenes, 108
 Heterocycles, benzoannelated, N-containing, 23
 biologically active, preparation, 105
 ephedra, 101
 five-membered, radical cyclization, 188
 five-membered, via Pd catalysis, 117
 from catechols, 173
 from cyclocarbonylation of acetylenes, 185
 from pyrrole oximes, 68
 from quinones, 173
 N-containing, 108
 N-containing, from arylcyclopropane, 67
 O-containing, from arylcyclopropane, 67
 preparation, intramolecular Heck reaction, 106
 seven membered, 173
 six-membered, radical cyclization, 188
 six-membered, via Pd catalysis, 117
 via intramolecular aryl radical reactions, 105
 Heterocyclic carbenes, nucleophilic, 88
 Suzuki Miyaura coupling, 35
 Heterocyclic chemistry, book, 206
 Heterocycloquinolines, 27
 Heterophospholes, cycloaddition, 128
 Histamines, fluorinated, 134
 Host–guest chemistry, phosphorylated host, 200
 Houben Weyl molecular transformation, book, 212
 Hydroamination of alkenes, 21
 Hydroformylation, asymmetric, phosphite ligands, 194
 Hydrogenation, asymmetric, Rh, Pligands, 193
 triphasic, microchannel, 165
 Hydroquinones, deprotonation, 84
 Hydrosilylation, Ru catalyst, 36
 Hydroxybenzyl acetate, 161
 Hydroxylfuranones, synthesis, 154
 Hydroxypyrimidines, carbonyl condensation, 160
 Imidazoles, fluorinated, 134
 Iminodihydrofuranones, 69
 Iminophosphoranes, aza Wittig reaction, 108
 building blocks, 108
 Indium compounds, in synthesis, 123
 Indole alkaloids, 146
 Indoles, fluorinated, 134
 Iodine electrophiles, stereoselective, 60
 Iridoids, natural product synthesis, 155
 Isopolyhalomethanes, 104
 Isoprostanes, natural product synthesis, 155
 Isoquinoline alkaloids, 147
 asymmetric synthesis, 50
 Isoxazoles, flash vacuum pyrolysis, 114
 hydroxy-, using Meldrum acid, 178
 Jasmonoids, natural product synthesis, 155
 Ketal cleavage, phenyl dichlorophosphate, 179
 Ketone preparation, phenyl dichlorophosphate, 179
 solvent free, 120
 Ketones, catalytic ionic hydrogenation, 61
 chiral, for epoxidation of olefins, 3
 enantioselective Baeyer Villiger oxidation, 113
 halogenation, 179
 α -aminoxylation, 37
 Lactams, β -, asymmetric synthesis, 14
 using Meldrum's acid, 178
 synthesis, 9, 97
 synthesis, Kinugasa reaction, 34
 via phenyl dichlorophosphate, 179
 Lactonization, halo-, 184
 seleno, 184
 Lewis base catalysts, 9
 Ligands, all carbon, 33
 Meldrum acid, 178
 Metallabenzenes, 1
 Metallacarboranes, cobalt, 85
 Metallacycles, five-membered, 45
 Metallocenes, Mn tricarbonyl, 84
 Metallocyclopentyne, 45
 Metathesis catalyst, supported, 148
 Methane dissociation, gas–surface reactions, 164
 Microwaves, in synthesis, 109
 Mitsunobu reaction, separations, 66
 Molecular reactors, 65
 Monosaccharides, book, 208
 C-substituted, 150
 Naphthalene, bimetallic complexes, 84
 Mn tricarbonyl transfer agents, 84
 Naphthylisoquinoline alkaloids, 147
 Natural product heterocycles, preparation, 105
 Natural products, polycyclic, from acyclic precursors, 74
 Natural products, synthesis, allylic substitution, 155
 Natural products, synthesis with SmI₂, 51
 Nickel catalyst, reductive coupling, 46
 reductive cyclization, 46
 Nickel dichloride lithium arene, 55
 Nicotine alkaloids, 124
 Nicotinic acetylcholine receptor ligands, 124
 Nitroso compounds, 49
 Nortropane alkaloids, 145
 Norzoanthamine, total synthesis, 167
 Nucleic acid bases, electron binding, 80
 Nucleophilic heterocyclic carbenes, 88
 Nucleosides, C-, preparation, 182
 Olefin epoxidation, with inorganic peroxide, 19
 Olefin ligands, bidentate, chiral, 40
 Olefin metathesis, Ru catalyst, 190
 Olefins, asymmetric epoxidation with chiral ketones, 4
 epoxidation, with chiral ketones, 3
 Oligosaccharides, book, 208
 solid-phase synthesis, 25
 synthesis, 25
 Organocatalysis, asymmetric, 2, 11
 Organofluorine compounds, via iodine fluorides, 131
 Organogermanes, cross coupling, 122
 Organolanthanide catalysis, 21
 Organometallics, chiral, C-transition metal, 62
 double bonds, 81
 metal clusters, 91
 unsaturated hydrocarbon bridges, 89
 Organophosphorus compounds, book, 204
 preparation, 199
 organic/inorganic hybrids, 202
 Organosilanes, cross coupling, 122
 Organosilicon compounds, 169
 direct synthesis, 32
 hydrazide-based, 31
 Organostannane compounds, 141
 Organotin compounds, 141, 144
 Osmabenzenes, 1
 Oxacycles, solid-phase synthesis, 175
 Oxanorbornenes, allylic substitution, 149
 reaction with dialkylzinc, 149
 Oxazoline chiral ligands, asymmetric synthesis, 53
 Oxidative carbonylation, Pd catalyst, 110
 Oxime ethers, alkylation, 175
 preparation, 68
 Oxoammonium oxidizing agents, 153
 Palladium ligands, stereoselective synthesis, 52
 Palladium oxidase catalyst, 42
 Peptide catalysts, asymmetric synthesis, 15
 Peptides, beta-sheet, 56
 immobilized, metal binding, 157
 molecular scaffolds, 56
 solid-phase synthesis, analysis, 95
 Peptidomimetics, 177
 Perfluorinated organic compounds, 132
 Perfluoroorganosilver compounds, 136
 Pfitzinger reaction, 70
 Phenols, sterically hindered, 161
 Phenyl dichlorophosphate, 179
 Phenyl ethenyl ferrocenyl oligomers, 82
 Phenylethylamines, 147
 Phenylsilane, alkylation, 36
 Phosphaalkenes, fluorinated, 135
 Phosphine ligand, P-chirogenic, 197
 Phosphine ligands, Suzuki-Miyaura coupling, 35
 Phosphitylating reagent, 201
 Phospho Fries rearrangement, anionic, 99
 Phospholane ligand, chiral, 195
 Phospholanes, asymmetric catalysis, 195
 Phospholide zwitterion ligands, 203
 Phosphoroamidites, activation, 201
 Phosphorofluoridites, 201
 Phosphorus hydrogen bond additions, 199
 Phosphorus ligands, asymmetric hydrogenation, 193
 chiral, 73
 Phosphorus ylide chemistry, 198
 Phosphorus, organometallic complex, 28
 Photochemistry, book, 207
 Phthalaldehydes, ortho-, with nucleophiles, 48
 Piperazinones, bridged, stereoselective preparation, 72
 Plant growth regulators, 68

- Polycyclic aromatic hydrocarbons, 96
 Polysaccharide, bacterial, biosynthesis, 26
 Propadienes, fluorinated, 137
 Pyrazoles, flash vacuum pyrolysis, 114
 Pyridazino fused rings, preparation, 174
 Pyridine oxides, chiral, 192
 Pyridines, organometallic complexes, 30
 substituted, synthesis, 187
 Pyridinium alkaloids, betainic, 100
 Pyridooxazines, 29
 Pyridopyrimidines, 29
 Pyridothiazines, 29
 Pyrones, substituted, preparation, 178
 Pyrrole aldoximes, 68
 Pyrrole ketoximes, 68
 Pyrrole oximes, 68
 Quaternary ammonium fluorides, chiral catalysts, 7
 Quaternary ammonium salts, chiral catalysts, 6
 Quinoid supramolecules, from hydroquinones, 84
 Quinoline alkaloids, preparation, 105
 Quinoline carboxylic acid preparation, 70
 Quinolones, using Meldrum acid, 178
 Quinoxalines, dehydration, cyclization, 179
 Radicicol anticancer agent, 176
 Reducing agents, $\text{NiCl}_2\text{-Li-arene}$, 55
 Rhodium bisphosphine diolefin enantioselective catalysts, 196
 Samarium iodide, in cyclization, 51
 Selenabzenes, 107
 Selenanaphthalene, 107
 Selenium carborane ligands, 86
 Selenocarbonyls, fluorinated, 135
 Serotonin, fluorinated, 134
 Silicon, organometallic complex, 28
 Silyl ethers, monodeprotection, 186
 Silyl ketene acetals, acylation, 9
 Silylcupration, 24
 Silylenes, 168
 Silylum ions, 168
 Silylumylidene cation, 169
 Silylumylidenes, 168
 Sisaccharides, book, 208
 Solid-phase synthesis, colorimetric, 130
 functional group detection, 130
 Solvents, fluorous phase, 125
 ionic liquids, 125
 supercritical carbon dioxide, 125
 Spacers, conformation, biologically active molecules, 158
 Sparteine synthesis, 75
 Staudinger ligation, 38
 Steroid derivatives, combinatorial library, 129
 Steroid glycosylation, 183
 Styrenes, silylation, 24
 Sulfanylpyrimidines, carbonyl condensation, 160
 Sulfanyltetrazoles, alkylaryl-, 162
 Sulfonyl chloride chemistry, 170
 Sulfone radicals, C–C bond formation, 71
 Sulfur carborane ligands, 86
 Supramolecules, H bond, book, 209–10
 P-stabilized, 200
 Tellurium carborane ligands, 86
- Tetrafluoroallenes, 137
 Tetrafluorobutatrienes, 137
 Tetrahydropyridine, alkaloid synthesis, 119
 Tetramethylcyclobutadiene cobalt complex, 85
 Tetramethylpiperidine oxoammonium salt, oxidants, 153
 Tetraorganostannane halides, 141
 Tetrone acids, synthesis, 154
 Thiacalixarenes, functionalization, 78
 Thiamine, organocatalysis, 8
 Thioesters, via phenyl dichlorophosphate, 179
 Titancyclopropanes, 140
 Toluenesulfonylmethyl isocyanide synthon, 171
 Transesterification acylation reaction, 180
 Triazene linker, solid-phase synthesis, 23
 Triazenes, arene amine linkers, 23
 Triphenylenes, preparation, 54
 Triphenylmethanesulfenyl chloride, 170
 Vicinal tricarbonyls, cyano analog, 22
 Vinyl epoxides, allylic substitution, 149
 reaction with dialkylzinc, 149
 Vinylaziridines, allylic substitution, 149
 reaction with dialkylzinc, 149
 Vinylsilanes, preaparation, 24
 Welwistatin synthesis, 118
 Ylide chemistry, 198
 Zwitterionic phospholide ligands, 203

JO041003N