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 生年 1937 年

略歴

1961 年 3 月 大阪大学工学部応用化学科 卒業
 1963 年 3 月 大阪大学大学院工学研究科 修士課程修了
 1963 年 4 月 大阪大学 助手 基礎工学部
 1967 年 5 月 大阪大学工学博士 学位授与 (守谷一郎教授)
 1968-1970 年 コロンビア大学 博士研究員 (Ronald Breslow 教授)
 1972 年 11 月 大阪大学 助教授 基礎工学部
 1979 年 4 月 大阪大学 教授 基礎工学部
 1992 年 レンヌ大学 客員教授
 1995-2000 年 九州大学 教授 (兼任) 有機化学基礎研究センター
 1997 年 4 月 大阪大学大学院 教授 基礎工学研究科化学専攻 (配置換え)
 1997 年 5 月 パリ・P.M. Curie 大学 客員教授
 1998-1999 年 大阪大学 評議員
 2000-2005 年 日本学術会議 会員 (18 期、19 期)
 2001 年 3 月 大阪大学 定年退官 大阪大学名誉教授
 2001 年 4 月 岡山理科大学 教授 (客員)
 2006 年-現在 日本学術会議連携会員 (20 期、21 期)

受賞

1970 年 日本化学会進歩賞
 1991 年 日本学術振興会 NSERC Lectureship
 1995 年 日本化学会賞
 1995 年 Rennes 大学名誉博士号
 1996 年 MERCK-Schuchardt Lectureship
 2002 年 フンボルト研究賞
 2003 年 Minakata-Avogadro 講演賞
 2005 年 有機合成化学特別賞
 2010 年 日本学士院賞

学会活動

1985-1997 年 近畿化学協会 理事
 1989-1991 年 日本化学会 理事
 1991 年 有機合成化学協会 関西支部長
 1991-1993 年 有機合成化学協会 理事
 1994 年 日本化学会 副会長
 1996-1998 年 近畿化学協会 有機金属部会 部会長
 1997-1999 年 近畿化学協会 副会長
 1999 年 日本化学会 次期会長
 2000 年 化学技術戦略推進機構 理事
 2000 年 地球環境産業技術研究機構 評議員
 2000 年 日本化学会 会長
 2001 年- 財団法人高分子研究所 評議員
 2002-2007 年 日本学術振興会 創造機能化学第 116 委員会 委員長
 2003-2007 年 科学技術振興機構 化学技術振興審議会基礎研究部会委員

プロジェクト

1992-1995 年 文部科学省科学研究費重点領域「反応性有機金属化合物」
 1996-2001 年 日本学術振興会未来開拓「環境調和型触媒プロセス」プロジェクトリーダー

学術誌編集委員及び委員長

| | | |
|-------------|-----------------------------------|----------|
| 1989-1991 年 | Chemistry Letters | 編集委員 |
| 1992-2009 年 | Synlett | 国際名誉編集顧問 |
| 1994-1998 年 | Chemistry Letters | 編集委員長 |
| 1998-2001 年 | Journal of Molecular Catalysis, A | 編集委員 |
| 1999-2002 年 | Green Chemistry | 編集委員 |
| 2005 年- | Chemistry Letters | 編集顧問 |

国際会議組織委員及び委員長

第7回有機合成指向有機金属化学国際会議 (OMCOS-7 : 神戸) :
 組織委員長 (1993 年 5 月)、組織委員 (1991 年より)
 国際有機化学京都会議 (IKCOC) : 組織委員 (1979 年 [第1回] より)
 均一系触媒国際会議 (ISHC) : 組織委員 (1998 年より)

研究分野

有機合成指向有機金属化学
 均一系触媒反応の開拓
 グリーン触媒反応
 生体触媒酸化反応
 環境型遷移触媒反応 無塩プロセス
 C-H 活性

Recent Invited and Plenary Lectures at International Symposium

International Conference on Green & Sustainable Chemistry, Singapore, 2009. 8. 3-5.
 11th International Symposium on Natural Products Chemistry, Karachi, Pakistan, 2008. 10. 29-11. 1.
 15th National Conference on Organometallic Chemistry, Nanjing, China, 2008. 10. 20-23.
 9th International Symposium on Green Chemistry in China, Hefei, China, 2008.5.12-14.
 Farewell Symposium Roger Sheldon A Journey in Green Chemistry, Delft, The Netherlands, 2007. 12. 6-7.
 A*STAR-Noyori Forum Joint Symposium, Singapore, 2007. 5. 14-16.
 International Symposium on Current Perspectives in Organic Chemistry, Kolkata, India, 2006. 12. 7-9.
 The 21th Century COE International Symposium, Nagaoka, Japan, 2006. 9. 29-30.
 The 4th Conference on Chemistry, Cairo, Egypt, 2006. 3. 5-8.
 Organic Chemistry, Today and Tomorrow, Bangalore, India, 2006. 1. 4-7.
 The 2005 Pacifichem Conference, Green Chemical Processes, Hawaii, USA, 2005. 12. 7.
 The 15th International Symposium on Fine Chemistry and Functional Polymers, Shanghai, China, 2005. 10. 17-20.
 The 7th World Congress on Recovery, Recycle, Re-integration, Chinese Academy of Science, Beijing, China, 2005. 9. 25-29.
 The 1st International Symposium on Organic Electron Transfer Chemistry directed toward Organic Synthesis, Osaka, Japan, 2005. 3. 19-22.
 2nd Symposium of High-tech Research Center Okayama University of Science, 2003. 11.24-25.
 Minakata-Avogadro Lectureship, University of Rome, 2003. 4. 28-5.5. Rome, Bari, Bologna, Milano, Italy.
 The lectureship to the memory of Ta-shue Chou, Taipei, Taiwan, 2003. 2. 22.
 The 11th Japan-Korea Seminar on Organic Chemistry, Teju, Korea, 2002.11.7-10.
 The 13th International Symposium on Homogeneous Catalysis, Tarragona, Spain, 2002.9.3-7.
 India-Japan NOST Symposium on Organic Chemistry, Trivandrum, India, 2001.12.13-15.
 First Japan-Australia Symposium on Organic Chemistry (JASOC-1), Melbourne, Australia, 2001.12.10-11.
 First NIAF MeRinOS Joint Meeting on Fundamental and Applied Aspect of Synthesis, Belgium, 2001.9.28-10.2.
 18th International Congress of Heterocyclic Chemistry, Yokohama, Japan, 2001.7.29-8.3.
 Post OMCOS-XI Symposium, Thirty Years of The Cross-Coupling reaction, Kyoto, Japan, 2001.7.27-28.
 11th IUPAC Symposium on Organometallic Chemistry directed towards Organic Synthesis, Taipei, Taiwan, 2001.7.22-26.
 The 87th Annual Meeting of the Korean Chemical Society, Seoul, Korea, 2001.4.20.
 The Breslow Symposium-Celebrating the 70th Birthday of Ronald Breslow, New York, USA, 2001.3.24.
 2000 International Chemical Congress of Pacific Basin Societies (Pacifichem 2000), Honolulu, Hawaii, USA, 2000.12.14-19.
 The 10th Japan-Korea Seminar on Organic Chemistry, Sendai, Japan, 2000.11.26-28.
 2000 International Symposium on Organic Reactions (ISOR 2000), Kyoto, Japan, 2000.10.24.
 Special Symposium Inaugurating the Herbert C. Brown Distinguished Professorship and the Annual Industrial Associates Meeting, West Lafayette, USA, 2000.9.28-30.
 Congre's de la Socie'te' Francaise de Chimie, Rennes, France, 2000.9.18-22.
 XIXth International Conference on Organometallic Chemistry (ICOMC), Shanghai, China, 2000.7.23-28.
 Gratama Workshop 2000-Chemistry and Chemical Technology for a Sustainable Society, Osaka, Japan, 2000.4.21-25.

Recent Publications of Original Papers

- S.-I. Murahashi, N. Miyaguchi, S. Noda, T. Naota, A. Fujii, Y. Inubushi and N. Komiya: Ruthenium-Catalyzed Oxidative Dearomatization of Phenols to 4-(tert-Butylperoxy)cyclohexadienones: Synthesis of 2-Substituted Quinones from p-Substituted Phenols, *Eur. J. Org. Chem.*, **27**, 5355-5365 (2011).
- S.-I. Murahashi, Development of biomimetic catalytic oxidation methods and non-salt methods using transition metal-based acid and base ambiphilic catalysts, *Proc. Jpn. Acad. Ser. B*, **87**, 242-253 (2011).
- S.-I. Murahashi, A. Fujii, Y. Inubushi and N. Komiya: Synthesis of 2-substituted quinones, vitamin K₃, and vitamin K₁ from p-cresol. BF₃ · OEt₂-catalyzed methyl migration of 4-tert-butylidioxycyclohexadienones, *Tetrahedron Letters*, **51**, 2339-2341 (2010).
- H. Takaya, M. Ito, and S.-I. Murahashi: Ruthenium-Catalyzed Addition of Carbonyl Compounds to the Carbon-Nitrogen Triple Bonds of Nitriles: α -C-H Activation of Carbonyl Compounds, *J. Am. Chem. Soc.*, **131**, 10824-10825 (2009).
- S.-I. Murahashi, T. Naota, and Y. Nakano: Ruthenium-Catalyzed Regioselective Reactions of Nitriles and 1,3-Dicarbonyl Compounds with Terminal Alkynes, *Synlett*, 3355-3360 (2009).
- Y. Guo, X. Zhao, D. Zhang, S.-I. Murahashi: Iridium-Catalyzed Reactions of Trifluoromethylated Compounds with Alkenes: A Csp³---H Bond Activation α to the Trifluoromethyl Group, *Angew. Chem. Int. Ed.* **48**, 2047-2949, (2009).
- S.-I. Murahashi, T. Nakae, H. Terai, and N. Komiya: Ruthenium-Catalyzed Oxidative Cyanation of Tertiary Amines with Molecular Oxygen or Hydrogen Peroxide and Sodium Cyanide: sp³ C-H Bond Activation and Carbon-Carbon Bond Formation, *J. Am. Chem. Soc.* **130**, 11005-11012 (2008).
- T. Naota, A. Tanna, S. Kamuro, M. Hieda, K. Ogata, S.-I. Murahashi, and H. Takaya: Switchable C- and N-Bound Isomers of Transition-Metal Cyanocarbanions: Synthesis and Interconversions of Cyclopentadienyl Ruthenium Complexes of Phenylsulfonyletonitrile Anions, *Chem. Eur. J.* **14**, 2482-2498 (2008).
- S.-I. Murahashi, and D. Zhang: Ruthenium Catalyzed Biomimetic Oxidation in Organic Synthesis Inspired by Cytochrome P-450, *Chemical Society Reviews* **37**, 1490-1501 (2008).
- K. Suzuki, T. Watanabe, and S.-I. Murahashi: Aerobic Oxidative Transformation of Primary Amines to Oximes Catalyzed by 1,1-Diphenyl-2-picrylhydrazyl (DPPH) and Tungstated Alumina, *Angew. Chem. Int. Ed.* **47**, 2079-2081 (2008).
- S.-I. Murahashi, Y. Okano, H. Sato, T. Nakae, N. Komiya: Aerobic Ruthenium-Catalyzed Oxidative Transformation of Secondary Amines to Imines, *Synlett* 1675-1678 (2007).
- L. Provins, and S.-I. Murahashi: Oxidation of olefins catalyzed by new binaphthyl-ruthenium(III) complexes, *Arkivoc* (x)107-120 (2007).
- S.-I. Murahashi: Development of Ruthenium Catalyzed Oxidation Reactions Inspired by Cytochrome P-450, *J. Synth. Org. Chem. Jpn.* **65**, 2-13 (2007).
- Y. Imada, H. Iida, S. Ono, Y. Masui, and S.-I. Murahashi: Flavin-Catalyzed Oxidation of Amines and Sulfides with Molecular Oxygen: Biomimetic Green Oxidation, *Chem. Asian. J.* **1**, 136-147 (2006).
- Y. Imada, M. Nishida, K. Kutsuwa, S. I. Murahashi, T. Naota: Palladium-Catalyzed Asymmetric Amination of 2,3-Allyl Phosphates, *Org. Lett.* **7**, 5837-5839 (2005).
- S.-I. Murahashi, S. Noji, T. Hirabayashi, N. Komiya: Manganese-Catalyzed Enantioselective Oxidation of C-H Bonds of Alkanes and Silyl Ethers to Optically Active Ketones, *Tetrahedron Asymmetry* **16**, 3527-3535 (2005).
- S.-I. Murahashi, N. Komiya, H. Terai: Ruthenium-Catalyzed Oxidative Cyanation of Tertiary Amines with Hydrogen Peroxide and Sodium Cyanide, *Angew. Chem. Int. Ed.* **44**, 6931-6933 (2005).
- Y. Imada, H. Iida, S.-I. Murahashi, and T. Naota: An Aerobic Organocatalytic, and Chemoselective Method for Baeyer-Villiger Oxidation, *Angew. Chem. Int. Ed.* **44**, 1704-1706 (2005).
- S.-I. Murahashi, S. Noji, and N. Komiya: Catalytic Enantioselective Oxidation of Alkanes and Alkenes Using (Salen)Manganese Complexes Bearing a Chiral Binaphthyl Strapped Unit, *Adv. Synth. Catal.* **346**, 195-198 (2004).
- H. Terai, H. Takaya, and S.-I. Murahashi: Iridium-Catalyzed Selective C-C Bond Cleavage of Nitriles and Ketones. *Synlett* 2185-2187 (2004).
- S.-I. Murahashi, S. Noji, T. Hirabayashi, and N. Komiya: Manganese-Catalyzed Oxidative Transformation of Silyl Ethers to Ketones: Enantioselective Synthesis of Optically Active β - and γ -Siloxyketones. *Synlett* 1739-1742 (2004).
- S.-I. Murahashi: Transition-Metal-Based Lewis Acid, Base, and Ambiphilic Catalyst. Development of Non-salt Processes, *J. Synth. Org. Chem. Jpn.* **61**, 425-435 (2003).
- S.-I. Murahashi, N. Komiya, H. Terai, and T. Nakae: Aerobic Ruthenium-Catalyzed Oxidative Cyanation of Tertiary Amines with Sodium Cyanide, *J. Am. Chem. Soc.* **125**, 15312-15313 (2003).
- Y. Imada, H. Iida, S. Ono, and S.-I. Murahashi: Flavin Catalyzed Oxidations of Sulfides and Amines with Molecular Oxygen, *J. Am. Chem. Soc.* **125**, 2868-2869 (2003).
- H. Takaya, K. Yoshida, K. Isozaki, H. Terai, and S.-I. Murahashi: Transition-Metal-Based Lewis Acid and Base Ambiphilic Catalysts of Iridium Hydride Complexes: Multicomponent Synthesis of Glutarimides, *Angew. Chem. Int. Ed.* **42**, 3302-3304 (2003).
- S.-I. Murahashi, X. Zhou, and N. Komiya: Chlorinated Phthalocyanine Iron(II) Complex Catalyzed Oxidation of Alkanes and Alkenes with Molecular Oxygen in the Presence of Acetaldehyde, *Synlett* 321-324 (2003).
- S.-I. Murahashi: Development of Biomimetic Catalytic Oxidation Reactions, *Shokubai* **44**, 259-264 (2002).
- S.-I. Murahashi, H. Takaya, and T. Naota: Ruthenium Catalysis in Organic Synthesis, *Pure Appl. Chem.* **74**, 19-23 (2002).
- T. Naota, A. Tanna, S. Kamuro, and S.-I. Murahashi: Mechanism of the Interconversions between C- and N-Bound Transition Metal α -Cyanocarbanions, *J. Am. Chem. Soc.* **124**, 6842-6843 (2002).
- S.-I. Murahashi, S. Ono, and Y. Imada: Asymmetric Baeyer-Villiger Reaction with Hydrogen Peroxide Catalyzed by a Novel Planar-Chiral Bisflavin, *Angew. Chem. Int. Ed.* **41**, 2366-2368 (2002).
- S.-I. Murahashi, Y. Imada, T. Kawakami, K. Harada, Y. Yonemushi, and N. Tomita: Enantioselective Addition of Ketene Silyl Acetals to Nitrones Catalyzed by Chiral Titanium Complexes. Synthesis of Optically Active β -Amino Acids, *J. Am. Chem. Soc.* **124**, 2888-2889 (2002).
- S.-I. Murahashi: Palladium-Catalyzed Cross-Coupling Reactions of Organic Halides with Grignard Reagents, Organolithium Compounds, and Heteroatom Nucleophiles, *J. Organomet. Chem.* **653**, 27-33 (2002).
- Y. Imada, K. Ueno, K. Kutsuwa, and S.-I. Murahashi: Palladium-Catalyzed Asymmetric Alkylation of Alka-2,3-dienyl Phosphates. Synthesis of Optically Active Allenes, *Chem. Lett.* 140-141 (2002).

34. T. Hottop, H.-J. Gutke, and S.-I. Murahashi: Synthesis of 4-Demethoxyadriamycinone Utilizing Ruthenium-Catalyzed Oxidation of Allyl Acetates, *Tetrahedron Lett.* **42**, 3343-3346 (2001).
35. H. Takaya and S.-I. Murahashi: Activation of C-H Bonds α to Nitriles for Combinatorial Chemistry: Ruthenium-Catalyzed Aldol and Michael Reactions of Polymer-Supported Nitriles, *Synlett* 991-992 (2001).
36. S.-I. Murahashi, N. Komiya, Y. Hayashi, and T. Kumano: Copper Complexes for Catalytic, Aerobic Oxidation of Hydrocarbons, *Pure & Appl. Chem.* **73**, 311-314 (2001).
37. H. Takaya, S. Kojima, and S.-I. Murahashi: Rhodium Complex-Catalyzed Reaction of Isonitriles with Carbonyl Compounds: Catalytic Synthesis of Pyrroles, *Org. Lett.* **3**, 421-424 (2001).
38. T. Naota, A. Tannna, and S.-I. Murahashi: Carbon-Carbon Bond Forming Reactions of N-Bound Transition Metal α -Cyanocarbanions: A Mechanistic Probe for Catalytic Michael Reactions of Nitriles, *Chem. Commun.* 63-64 (2001).
39. N. Komiya, S. Noji, and S.-I. Murahashi: Ruthenium-catalyzed Oxidation of Alkanes with Peracetic Acid in Trifluoroacetic Acid: Ruthenium as an Efficient Catalyst for the Oxidation of Unactivated C-H Bonds, *Chem. Commun.* 65-66 (2001).
40. S.-I. Murahashi, N. Komiya, Y. Oda, T. Kuwabara, and T. Naota: Ruthenium-Catalyzed Oxidation of Alkanes with tert-Butyl Hydroperoxide and Peracetic Acid, *J. Org. Chem.* **65**, 9186-9193 (2000).
41. S.-I. Murahashi, A. Mitani, and K. Kitao: Ruthenium Catalyzed Glycine-Selective Oxidative Backbone Modification of Peptides, *Tetrahedron Lett.* **41**, 10246-10249 (2000).
42. T. Kawakami, H. Ohtake, H. Arakawa, T. Okachi, Y. Imada, and S.-I. Murahashi: Asymmetric Synthesis of β -Amino Acids by Addition of Chiral Enolates to Nitrones via N-Acyloxyiminium Ions, *Bull. Chem. Soc. Jpn.* **73**, 2423-2444 (2000).
43. S.-I. Murahashi, K. Take, T. Naota, and H. Takaya: Aldol and Michael Reactions of Nitriles Catalyzed by Cyclopentadienylruthenium Enolate Complexes, *Synlett* 1016-1018 (2000).
44. S.-I. Murahashi and H. Takaya: Low-Valent Ruthenium and Iridium Hydride Complexes as Alternatives to Lewis Acid and Base Catalysts, *Acc. Chem. Res.* **33**, 225-233 (2000).
45. T. Naota, A. Tannna, and S.-I. Murahashi: Synthesis and Characterization of C- and N-Bound Isomers of Transition Metal α -Cyanocarbanions, *J. Am. Chem. Soc.* **122**, 2960-2961 (2000).
46. S.-I. Murahashi, T. Tsuji, and S. Ito: Synthesis of Optically Active N-Hydroxylamines by Asymmetric Hydrogenation of Nitrones with Iridium Catalysts, *Chem. Commun.* 409-410 (2000).
47. S.-I. Murahashi, K. Kitao, and A. Mitani: Glycine-Selective Ruthenium Catalyzed Oxidative Modification of Short Peptides, *Peptide Science 1999*, 137-140 (2000).
48. S.-I. Murahashi, J. Sun, H. Kurosawa, and Y. Imada: Synthesis of Homochiral β -Sulfinyl Nitrones and Their Application for Enantioselective Synthesis of (+)-Euphococcinine, *Heterocycles* **52**, 557-561 (2000).

Recent Publications of Books and Reviews

1. 村橋俊一：私が化学を選んだ理由、化学だいすきクラブニュースレター、日本化学会化学教育協議会、3 (2008. 夏号)。
2. S.-I. Murahashi, N. Komiya, Ruthenium-catalyzed Oxidation for Organic Synthesis, In *Modern Oxidation Methods, 2nd Ed.*, Ed., J.-E. Backvall, Wiley-VCH, Weinheim, in press.
3. S.-I. Murahashi: Palladium-Phosphine-Complex-Catalyzed Reaction of Organolithium Compounds and Alkenyl Halides: (Z)- β -[2-(N,N-dimethylamino)phenyl]styrene, In *Thematic Collection Organic Synthesis*, Ed., R. Danheiser, in press.
4. S.-I. Murahashi and Y. Imada: Asymmetric Synthesis of Amines and Amino Acids from Amines, In *Asymmetric Synthesis-The Essentials*, Eds., S. Braese, M. Christmann, Wiley-VCH, Weinheim, 40-44 (2007).
5. S.-I. Murahashi and C. Zhao: Pentahyridobis(triisopropylphosphine)iridium(V) In *Electronic Encyclopedia of Reagents for Organic Synthesis*, Ed. L. A. Paquette, Wiley, New York, (2006).
6. S.-I. Murahashi and C. Zhao: Dichlorotris(triphenylphosphine)ruthenium(II) In *Electronic Encyclopedia of Reagents for Organic Synthesis*, Ed. L. A. Paquette, Wiley, New York, (2006).
7. S.-I. Murahashi: Transition Metal Catalyzed C-H Activation of Pronucleophile by α -Heteroatom Effect, In *Handbook of CH Transformation*, Ed. G. Dyker, Wiley-VCH, Weinheim, Vol.2, 319-328 (2005).
8. S.-I. Murahashi: Synthesis of Nitriles with Retention of the Cyano Group, In *Science of Synthesis*, Ed., S.-I. Murahashi, Thieme, Stuttgart, Vol 19, 345-425 (2004).
9. S.-I. Murahashi and Y. Imada: Amine Oxidations, In *Transition Metals for Organic Synthesis, Vol 2. Second Revised and Enlarged*, Ed., M. Beller, C. Bolm, Wiley-VCH, Weinheim, 497-507 (2004).
10. S.-I. Murahashi and N. Komiya: Ruthenium-Catalyzed Oxidation of Alkenes, Alcohols, Amines, beta-Lactams, Phenols, and Hydrocarbons, In *Modern Oxidation Methods*, Ed., J.-E. Backvall, Wiley-VCH, Weinheim, 165-191(2004).
11. S.-I. Murahashi and N. Komiya: Oxidation Reactions, In *Ruthenium in Organic Synthesis*, Ed., S.-I. Murahashi, Wiley-VCH, Weinheim, 53-93 (2004).
12. S.-I. Murahashi and N. Komiya: Oxidation of Amines, Alcohols, and Related Compounds, In *Handbook of Organopalladium Chemistry for Organic Synthesis*, Ed., E. Negishi, John Wiley & Sons, New York, Vol.2, 2881-2894 (2002).
13. T. Hosokawa and S.-I. Murahashi: Oxypalladation-Dehydropalladation Tandem and Related Reactions, In *Handbook of Organopalladium Chemistry for Organic Synthesis*, Ed., E. Negishi, John Wiley & Sons, New York, Vol.2, 2169-2192 (2002).
14. T. Hosokawa and S.-I. Murahashi: Intermolecular Oxypalladation Not Accompanied by Dehydrogenation, In *Handbook of Organopalladium Chemistry for Organic Synthesis*, Ed., E. Negishi, John Wiley & Sons, New York, Vol.2, 2161-2168 (2002).
15. T. Hosokawa and S.-I. Murahashi: Other Intramolecular Oxypalladation-Dehydropalladation Reactions, In *Handbook of Organopalladium Chemistry for Organic Synthesis*, Ed., E. Negishi, John Wiley & Sons, New York, Vol.2, 2141-2159 (2002).
16. S.-I. Murahashi and Y. Imada: Palladium-Catalyzed Substitution Reactions of Nitrogen and Other Group 15 Atom Containing Allylic Derivatives, In *Handbook of Organopalladium Chemistry for Organic Synthesis*, Ed., E. Negishi, John Wiley & Sons, New York, Vol.2, 1817-1825 (2002).
17. S.-I. Murahashi: Recommendation for Green Chemistry, *Kagaku to Kyoiku*, **50**, 426-429 (2002).
18. S.-I. Murahashi: Green Chemistry-Homogeneous Complex Catalysts, In *Green Chemistry-Chemistry for Sustainable Society*, Ed., by Makoto Misonou and S.-I. Murahashi, Kodansha, Tokyo, 99-111 (2001).

19. S.-I. Murahashi: Development of Transition Metal Catalyst as Lewis Acid or Base Substitutes, *Organomet. News*, 90-93 (2001).
20. S.-I. Murahashi: Green Chemistry and the Development of New Catalyst Therefor, *Kagaku Kogyo*, **51**, 409-416 (2000).
21. S.-I. Murahashi: Exploitation of New Catalytic Reactions, *Kagaku Kogyo*, **51**, 52-57 (2000).