

## 菅 誠治 研究業績リスト

### 査読付論文誌

- (1) Catalytic Asymmetric Induction. Highly Enantioselective Addition of Dialkylzincs to Aldehydes. Kitamura, M.; Suga, S.; Kawai, K.; Noyori, R. *J. Am. Chem. Soc.* **1986**, *108*, 6071-6072.
- (2) Enantioselective Alkylation of Carbonyl Compounds. From Stoichiometric to Catalytic Asymmetric Induction. Noyori, R.; Suga, S.; Kawai, K.; Okada, S.; Kitamura, M. *Pure Appl. Chem.* **1988**, *60*, 1597-1606.
- (3) Enantioselective Addition of Dialkylzincs to Aldehydes Promoted by Chiral Amino Alcohols. Mechanism and Nonlinear Effect. Kitamura, M.; Okada, S.; Suga, S.; Noyori, R. *J. Am. Chem. Soc.* **1989**, *111*, 4028-4036.
- (4) Enantioselective Addition of Diorganozincs to Aldehydes Catalyzed by  $\beta$ -Amino Alcohols. Noyori, R.; Suga, S.; Kawai, K.; Okada, S.; Kitamura, M.; Oguni, N.; Hayashi, M.; Kaneko, T.; Matsuda, Y. *J. Organomet. Chem.* **1990**, *382*, 19-37.
- (5) Syntheses of Dibenzo[c,e][1,2]diselenin and Related Novel Chalcogenide Heterocyclic Compounds. Murata, S.; Suzuki, T.; Yanagisawa, A.; Suga, S. *J. Heterocyclic Chem.* **1991**, *28*, 433-438.
- (6) Enantiomer Recognition of Asymmetric Catalysts. Thermodynamic Properties of Homochiral and Heterochiral Dimers of the Methylzinc Alkoxide Formed from Dimethylzinc and Enantiomeric 3-*exo*-(Dimethylamino)isoborneol. Kitamura, M.; Suga, S.; Niwa, M.; Noyori, R.; Z.-X. Zhai; Suga, H. *J. Phys. Chem.* **1994**, *98*, 12776-12781.
- (7) Self and Nonsself Recognition of Asymmetric Catalysts. Nonlinear Effects in the Amino Alcohol-Promoted Enantioselective Addition of Dialkylzincs to Aldehydes. Kitamura, M.; Suga, S.; Niwa, M.; Noyori, R. *J. Am. Chem. Soc.* **1995**, *117*, 4832-4842.
- (8) Homochiral and Heterochiral Dimers of the Methylzinc Alkoxide Formed from Dimethylzinc and Enantiomeric 3-*exo*-(Dimethylamino)isoborneol—Origin of the Distinct Differences in Solution-Phase Behavior and Crystal Structures. Kitamura, M.; Yamakawa, M.; Oka, H.; Suga, S.; Noyori, R. *Chem. Eur. J.* **1996**, *2*, 1173-1181.
- (9) Competition Between Electroauxiliaries. Selective Electrochemical Oxidation of Heteroatom Compounds Having Silicon and Tin on the Same Carbon. Yoshida, J.; Watanabe, M.; Toshioka, H.; Imagawa, M.; Suga, S. *Chem. Lett.* **1998**, 1011-1012.
- (10) Quantitative Analysis of the Chiral Amplification in the Amino Alcohol-Promoted Asymmetric Alkylation of Aldehydes with Dialkylzincs. Kitamura, M.; Suga, S.; Oka, H.; Noyori, R. *J. Am. Chem. Soc.* **1998**, *120*, 9800-9809.
- (11) 2-(2-Pyridyl)ethylsilyl group as a New Class of Electroauxiliary. Fine Tuning of the Electron Transfer Driven Reactions by Dynamic Coordination to silicon. Yoshida, J.; Suga, S.; Fuke, K.; Watanabe, M. *Chem. Lett.* **1999**, 251-252.
- (12) General and Efficient Method for the Synthesis of Alkoxyethylsilanes. Suga, S.;

- Miyamoto, K.; Watanabe, M.; Yoshida, J. *Appl. Organometal. Chem.* **1999**, *13*, 469-474.
- (13) 2-Pyridylsilyl Group as a Multifunctional "Phase Tag" for Solution Phase Synthesis. Yoshida, J.; Itami, K.; Mitsudo, K.; Suga, S. *Tetrahedron Lett.* **1999**, *40*, 3403-3406.
- (14) Control of the Free Radical Reaction by Dynamic Coordination: Unique Reactivity of Pyridylethyl-Substituted Tin Hydrides. Suga, S.; Manabe, T.; Yoshida, J. *Chem. Commun.* **1999**, 1237-1238.
- (15) Direct Oxidative Carbon-Carbon Bond Formation Using "Cation Pool" Method I. Generation of Iminium Cation Pools and Their Reaction with Carbon Nucleophiles. Yoshida, J.; Suga, S.; Suzuki, S.; Kinomura, N.; Yamamoto, A.; Fujiwara, K. *J. Am. Chem. Soc.* **1999**, *121*, 9546-9549.
- (16) Intramolecular Assistance of Electron Transfer from Heteroatom Compounds. Electrochemical Oxidation of 2-(2-Pyridyl)ethyl-Substituted Ethers, Sulfides, and Selenides. Watanabe, M.; Suga, S.; Yoshida, J. *Bull. Chem. Soc. Jpn.* **2000**, *73*, 243-247.
- (17) Electrooxidative Generation and Accumulation of Alkoxy-carbenium Ions and Their Reactions with Carbon Nucleophiles. Suga, S.; Suzuki, S.; Yamamoto, A.; Yoshida, J. *J. Am. Chem. Soc.* **2000**, *122*, 10244-10245.
- (18) Selective Electrochemical Oxidation of Heteroatom Compounds Having Both Silicon and Tin on the Same Carbon as Electroauxiliaries. Yoshida, J.; Watanabe, M.; Toshioka, H.; Imagawa, M.; Suga, S. *J. Electroanal. Chem.* **2001**, *507*, 55-65.
- (19) Reaction of Electrogenenerated "Iminium Cation Pool" with Organometallic Reagents. Direct Oxidative  $\alpha$ -Alkylation and -Arylation of Amine Derivatives. Suga, S.; Okajima, M.; Yoshida, J. *Tetrahedron Lett.* **2001**, *42*, 2173-2176.
- (20) Self and Nonsself Recognition of Chiral Catalyst: The Origin of Nonlinear Effects in the Amino-Alcohol Catalyzed Asymmetric Addition of Diorganozincs to Aldehydes. Noyori, R.; Suga, S.; Oka, H.; Kitamura, M. *Chem. Record*, **2001**, *1*, 85-100.
- (21) "Cation Flow" Method. A New Approach to Conventional and Combinatorial Organic Syntheses Using Electrochemical Micro Flow Systems. Suga, S.; Okajima, M.; Fujiwara, K.; Yoshida, J. *J. Am. Chem. Soc.* **2001**, *123*, 7941-7942.
- (22) Reduction of a "Cation Pool". A New Approach to Radical Mediated C-C Bond Formation. Suga, S.; Suzuki, S.; Yoshida, J. *J. Am. Chem. Soc.* **2002**, *124*, 30-31.
- (23) Basic Concepts of "Cation Pool" and "Cation Flow" Methods and Their Applications in Conventional and Combinatorial Organic Synthesis. Yoshida J.; Suga, S. *Chem. Eur. J.* **2002**, *8*, 2650-2658.
- (24) Electroauxiliary-Assisted Sequential Introduction of Two Carbon Nucleophiles on the Same  $\alpha$ -Carbon of Nitrogen: Application to the Synthesis of Spiro Compounds. Suga, S.; Watanabe, M.; Yoshida, J. *J. Am. Chem. Soc.* **2002**, *124*, 14824-14825.
- (25) Highly Selective Friedel-Crafts Monoalkylation Using Micromixing. Suga, S.; Nagaki, A.; Yoshida, J. *Chem. Commun.* **2003**, 354-355.
- (26) "N-Acyliminium Ion Pool" as a Hetero Diene in [4+2] Cycloaddition Reaction. Suga,

- S.; Nagaki, A.; Tsutsui, Y.; Yoshida, J. *Org. Lett.* **2003**, *5*, 945-947.
- (27) Generation of Carbon Free Radicals by the Reduction of Cation Pool. Suga, S.; Suzuki, S.; Maruyama, T.; Yoshida, J. *Bull. Chem. Soc. Jpn.* **2004**, *77*, 1545-1554.
- (28) Cationic Carbohydroxylation of Alkenes and Alkynes Using the Cation Pool Method. Suga, S.; Kageyama, Y.; Babu, G.; Itami, K.; Yoshida, J. *Org. Lett.* **2004**, *6*, 2709-2711.
- (29) Generation of Alkoxy-carbenium Ion Pools from Thioacetals and Applications to Glycosylation Chemistry. Suzuki, S.; Matsumoto, K.; Kawamura, K.; Suga, S.; Yoshida, J. *Org. Lett.* **2004**, *6*, 3755-3758.
- (30) Three-Component Coupling Based on the "Cation Pool" Method. Suga, S.; Nishida, T.; Yamada, D.; Nagaki, A.; Yoshida, J. *J. Am. Chem. Soc.* **2004**, *126*, 14338-14339.
- (31) "Cation Pool" Initiated Controlled/Living Polymerization Using Microsystems. Nagaki, A.; Kawamura, K.; Suga, S.; Ando, T.; Sawamoto, M.; Yoshida, J. *J. Am. Chem. Soc.* **2004**, *126*, 14702-14703.
- (32) Microflow Electroorganic Synthesis without Supporting Electrolyte. Horcajada, R.; Okajima, M.; Suga, S.; Yoshida, J. *Chem. Commun.* **2005**, 1303-1305.
- (33) Enhancement of Chemical Selectivity by Microreactors. Yoshida, J.; Nagaki, A.; Iwasaki, T.; Suga, S. *Chem. Eng. Technol.* **2005**, *28*, 259-266.
- (34) "Cation pool" method based on C-C bond dissociation. Effective generation of monocations and dications. Okajima, M.; Suga, S.; Itami, K.; Yoshida, J. *J. Am. Chem. Soc.* **2005**, *127*, 6930-6931.
- (35) Radical Addition to "Cation Pool". Reverse Process of Radical Cation Fragmentation. Maruyama, T.; Suga, S.; Yoshida, J. *J. Am. Chem. Soc.* **2005**, *127*, 7324-7325.
- (36) Cycloaddition of "N-Acyli-minium Ion Pools" with Carbon-Carbon Multiple Bonds. Suga, S.; Tsutsui, Y.; Nagaki, A.; Yoshida, J. *Bull. Chem. Soc. Jpn.* **2005**, *78*, 1206-1217.
- (37) Electrochemical Combinatorial Organic Syntheses Using Micro Flow Systems. Suga, S.; Okajima, M.; Fujiwara, K.; Yoshida, J. *QSAR Comb. Sci.* **2005**, *24*, 728-741.
- (38) Control of Extremely Fast Competitive Consecutive Reactions Using Micromixing. Selective Friedel-Crafts Aminoalkylation. Nagaki, A.; Togai, M.; Suga, S.; Aoki, N.; Mae, K.; Yoshida, J. *J. Am. Chem. Soc.* **2005**, *127*, 11666-11675.
- (39) Intramolecular Participation in Alkoxy-carbenium Ion Pools. Suga, S.; Suzuki, S.; Yoshida, J. *Org. Lett.* **2005**, *6*, 4717-4720.
- (40) Distannane Mediated Reaction of N-Acyli-minium Ion Pools with Alkyl Halides. A Chain Mechanism Involving Radical Addition followed by Electron Transfer. Maruyama, T.; Suga, S.; Yoshida, J. *Tetrahedron* **2006**, *62*, 6519-6525.
- (41) Indirect Cation Pool Method. Rapid Generation of Alkoxy-carbenium Ion Pools from Thioacetals. Suga, S.; Matsumoto, K.; Ueoka, K.; Yoshida, J. *J. Am. Chem. Soc.* **2006**, *128*, 7710-7711.
- (42) Electroauxiliary-Assisted Sequential Introduction of Organic Groups on the  $\alpha$ -Carbons of Nitrogen. Suga, S.; Watanabe, M.; Song, C.-H.; Yoshida, J. *Electrochemistry* **2006**, *74*,

672-679.

- (43) Selective Monoiodination of Aromatic Compounds with Electrochemically Generated  $I^+$  Using Micromixing. Midorikawa, K.; Suga, S.; Yoshida, J. *Chem. Commun.* **2006**, 3794-3796.
- (44) Oxidative Generation of Diarylcarbenium Ion Pools. Okajima, M.; Soga, K.; Nokami, T.; Suga, S.; Yoshida, J. *Org. Lett.* **2006**, *6*, 5005-5007.
- (45) Reaction of *N*-Acyliiminium Ion Pool with Benzylsilane. Implication of a Radical/Cation/Radical Cation Chain Mechanism Involving Oxidative C-Si Bond Cleavage. Maruyama, T.; Mizuno, Y.; Shimizu, I.; Suga, S.; Yoshida, J. *J. Am. Chem. Soc.* **2007**, *129*, 1902-1903.
- (46) Electrochemical Generation of Glycosyl Triflate Pools. Nokami, T.; Shibuya, A.; Tsuyama, H.; Suga, S.; Bowers, A. A.; Crich, D.; Yoshida, J. *J. Am. Chem. Soc.* **2007**, *129*, 10922-10928.
- (47) An Electroinitiated Cation Chain Reaction: Intramolecular Carbon-Carbon Bond Formation Between Thioacetal and Olefin Groups. Matsumoto, K.; Fujie, S.; Ueoka, K.; Suga, S.; Yoshida, J. *Angew. Chem. Int. Ed.* **2008**, *47*, 2506-2508.
- (48) Iterative Molecular Assembly Based on the Cation-Pool method. Convergent Synthesis of Dendritic Molecules. Nokami, T.; Ohata, K.; Inoue, M.; Tsuyama, H.; Shibuya, A.; Soga, K.; Okajima, M.; Suga, S.; Yoshida, J. *J. Am. Chem. Soc.* **2008**, *130*, 10864-10865.
- (49) Electro-initiated Coupling Reactions of *N*-Acyliiminium Ion Pools with Arylthiomethylsilanes and Aryloxymethylsilanes. Suga, S.; Shimizu, I.; Ashikari, Y.; Mizuno, Y.; Maruyama, T.; Yoshida, J. *Chem. Lett.* **2008**, *37*, 1008-1009.
- (50) Microflow System Controlled Carbocationic Polymerization of Vinyl Ethers. Nagaki, A.; Iwasaki, T.; Kawamura, K.; Yamada, D.; Suga, S.; Ando, T.; Sawamoto, M.; Yoshida, J. *Chem. Asian. J.* **2008**, *3*, 1558-1567.
- (51) Synthesis of Thiochromans Based on Indirect Cation Pool Method. Matsumoto, K.; Ueoka, K.; Fujie, S.; Yoshida, J. *Heterocycles* **2008**, *76*, 1103-1119.
- (52) Practical Electrochemical Iodination of Aromatic Compounds. Kataoka, K.; Hagiwara, Y.; Midorikawa, K.; Suga, S.; Yoshida, J. *Org. Process Res. Dev.* **2008**, *12*, 1130-1136.

#### 著書、総説、解説、その他

- (1) Nonclassical Chemistry from the Oldest Organometallic Compounds: Multiplication and Amplification of Chirality. Noyori, R.; Suga, S.; Okada, S.; Kawai, K.; Kitamura, M. In *Organic Synthesis via Organometallics*; Dötz, K. H.; Hoffmann, R. W., Eds.; Vieweg: Braunschweig, **1991**; pp 311-323.
- (2) 「溶液中におけるエナンチオマー間の相互認識」 菅 誠治, 野依良治 化学 **1992**, *47*; pp 646-647.
- (3) A New Concept and Technology in Electrooxidative Carbon-Carbon bond Formation. Yoshida, J.; Watanabe, M.; Toshioka, H.; Imagawa, M.; Suga, S. In *Novel Trend in*

*Electroorganic Synthesis*; Torii, S., Ed.; Springer-Verlag: Tokyo, **1998**; pp 99-102.

(4) Organoelemental Compounds. Yoshida, J.; Suga, S. In *Organic Electrochemistry, 4th Ed*; Lund, H.; Hammerich, O., Eds.; Marcel Dekker: New York, **2000**; pp 765-794.

(5) 「電子移動場での有機反応」 吉田潤一, 菅 誠治 季刊化学総説 No47. 「有機合成化学の新潮流」 ; 日本化学会編 ; 学会出版センター, **2000**; pp 138-148.

(6) 「カチオンプール法 –不安定なカルボカチオンを蓄え、そして反応させる–」 吉田潤一, 菅 誠治, 鈴木新吉 現代化学 **2001**, 7月号; pp 36-44.

(7) “Cation Pool” Method. Generation and Accumulation of Carbocations by Low Temperature Electrolysis. Yoshida, J.; Suga, S.; Suzuki, S.; Kinomura, N.; Okajima, M.; Watanabe, M.; Yamamoto, A.; Fujiwara, K. In *Reactive Intermediates In Organic and Biological Electrochemistry*; Peters, Schaefer, Workentin, Yoshida Eds.; Electrochemical Society, **2001**; pp 21-24.

(8) 「有機合成の自動化とそのための新手法の開発」 吉田潤一, 菅 誠治, 伊丹健一郎 化学工業 **2002**, vol. 53, 1月号; pp 6-12.

(9) 「マイクロリアクターの有機合成反応」 吉田潤一, 菅 誠治, 港 晶雄 ファインケミカル **2002**, vol. 31, No. 1; pp 32-41.

(10) 「カチオンプール法およびカチオンフロー法を用いたコンビナトリアル合成」 吉田潤一, 菅 誠治 「コンビナトリアルサイエンスの新展開」 ; 高橋孝志, 鯉沼秀臣, 植田充美編 ; シーエムシー出版, **2002**; pp 17-28.

(11) 「カチオンフロー法を用いたシリアルコンビナトリアル合成」 吉田潤一, 菅 誠治 有機合成化学協会誌 **2002**, vol. 60, No. 5; pp 482-483.

(12) New Electrochemical Micro Flow Systems for “Cation Flow” Method. Suga, S.; Okajima, M.; Fujiwara, K.; Yoshida, J. In *6th International Conference on Microreaction Technology (IMRET 6) Conference Proceedings*; AIChE, **2002**; pp. 29-31.

(13) 「海外におけるマイクロリアクターの研究と実用化」 吉田潤一, 菅 誠治 化学装置 **2002**, vol. 44, 9月号; pp 30-34.

(14) Cation Pool Method and Cation Flow Method. Yoshida, J., Suga, S. In *My Favorite Organic Synthesis*; The Society of Synthetic Organic Chemistry, Japan, **2002**; pp. 252-253.

(15) 「マイクロリアクターの有機合成反応」 吉田潤一, 菅 誠治, 港 晶雄 「マイクロリアクター –新時代の合成技術–」 ; 吉田潤一監修 ; シーエムシー出版, **2002**; pp 99-116.

(16) 「マイクロリアクター」 吉田潤一, 菅 誠治 「プロセスケミストリーの新展開」 第 III 編<合成の自動化> ; 吉田潤一監修 ; シーエムシー出版, **2002**; pp 160-171.

(17) 「有機電解」 菅 誠治 「実験化学講座 基礎編 IV」 ; 日本化学会編 ; 丸善, **2003**; pp 134-147.

(18) 「カチオンプール法およびカチオンフロー法による有機電解合成」 吉田潤一, 菅 誠治 「有機電解合成の新展開」 ; 淵上寿雄監修 ; シーエムシー出版, **2004**; pp 177-189.

(19) 「合成システム」 吉田潤一, 菅 誠治 「マイクロ化学チップの技術と応用」 ; 化学とマイクロ・ナノシステム研究会 ; 北森 武彦編 ; 丸善, **2004**; pp 48-58.

- (20) 「マイクロリアクターを用いた選択的有機合成反応」菅 誠治、吉田潤一 「ロボット・マイクロ合成最前線」；吉田潤一編；化学同人, **2004**; pp 93-105.
- (21) 「マイクロリアクターを用いた選択的有機反応」吉田潤一, 菅 誠治, 永木愛一郎 有機合成化学協会誌 **2005**, vol. 63, No. 5; pp 511-522.
- (22) 「マイクロリアクターによる選択的有機合成」菅 誠治 「マイクロリアクターテクノロジー」；エヌ・ディー・エス, **2005**; pp 131-142.
- (23) 「金触媒による炭素－炭素多重結合を利用した分子変換」菅 誠治 Organometallic News **2006**, No. 3; p 95.
- (24) 「電子移動反応による炭素カチオンの創製を機軸とする新しい有機合成」菅 誠治 有機合成化学協会誌 **2006**, vol. 64, No. 10; pp 1010-1020.
- (25) 「マイクロリアクターによる有機電解合成」吉田潤一, 菅 誠治 *Electrochemistry* **2007**, vol. 75, No. 1; pp 58-62.