

研究期間全年度 研究業績

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1. 発表論文等（査読付き論文，著書，総説等の発表状況）

- (1) Construction of Quaternary Stereogenic Carbon Centers through Copper-Catalyzed Enantioselective Allylic Cross-Coupling with Alkylboranes
Hojoh, K.; Shido, Y.; Ohmiya, H.*; Sawamura, M.* *Angew. Chem. Int. Ed.* **2014**, in press.
- (2) Silica-Supported Tripod Triarylphosphane: Application to Transition Metal Catalyzed C(sp³)-H Borylations
Iwai, T.; Murakami, R.; Harada, T.; Kawamorita, S.; Sawamura, M.* *Adv. Synth. Catal.* **2014**, in press.
- (3) Silica-supported Tripod Triarylphosphines: Application to Palladium Catalyzed Borylation of Chloroarenes
Iwai, T.; Harada, T.; Tanaka, R.; Sawamura, M.* *Chem. Lett.* **2014**, in press.
- (4) Tripod Immobilization of Triphenylphosphane on a Silica Gel Surface to Enable Selective Mono-P-ligation to Palladium: Application to Suzuki-Miyaura Cross-Coupling with Chloroarenes
Iwai, T.; Tanaka, R.; Harada, T.; Sawamura, M.* *Chem. Eur. J.* **2014**, *20*, 1057-1065. (10.1002/chem.201304081)
- (5) Site-selective C-H Borylation of Quinolines at the C-8 Position Catalyzed by a Silica-supported Phosphane-Iridium System
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- (6) Friedel-Crafts Functionalization of Cyclopentadienyl Ligand in Bucky Metallocenes
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- (8) Synthesis of Trisubstituted Alkenylstannanes through Copper-Catalyzed Three-Component Coupling with Alkylboranes, Alkynoates, and Tributyltin Methoxide
Wakamatsu, T.; Nagao, K.; Ohmiya, H.*; Sawamura, M.* *Angew. Chem. Int. Ed.* **2013**, *52*, 11620-11623. (10.1002/anie.201305973)

- (9) Cooperative Catalysis of Metal and O–H···O/sp³-C–H···O Two-point Hydrogen Bonds in Alcoholic Solvents: Copper-catalyzed Enantioselective Direct Alkynylation of Aldehydes with Terminal Alkynes
Ishii, T.; Watanabe, R.; Moriya, T.; Ohmiya, H.; Mori, S.*; Sawamura, M.* *Chem. Eur. J.* **2013**, *19*, 13547-13553.
- (10) Synthesis of a Chiral *N*-Heterocyclic Carbene Bearing a *m*-Terphenyl-Based Phosphate Moiety as an Anionic *N*-Substituent and Its Application to Copper-Catalyzed Enantioselective Boron Conjugate Addition
Iwai, T.; Akiyama, Y.; Sawamura, M.* *Tetrahedron: Asymmetry* **2013**, *24*, 729-735. (10.1016/j.tetasy.2013.05.013)
- (11) Copper-Catalyzed γ -Selective and Stereospecific Direct Allylic Alkylation of Terminal Alkynes: Synthesis of Skipped Enynes
Makida, Y.; Takayama, Y.; Ohmiya, H.*; Sawamura, M.* *Angew. Chem. Int. Ed.* **2013**, *52*, 5350-5354. (10.1002/anie.201305973)
- (12) Synthesis of Primary and Secondary Alkylboronates through Site-Selective C(sp³)–H Activation with Silica-Supported Monophosphine–Ir Catalysts
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- (13) Construction of Eight-Membered Carbocycles via Gold Catalysis with Acetylene-Tethered Silyl Enol Ethers
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- (14) Use of a Semihollow-Shaped Triethynylphosphane Ligand for Efficient Formation of Six- and Seven-Membered Ring Ethers through Gold(I)-Catalyzed Cyclization of Hydroxy-Tethered Propargylic Esters
Ito, H.; Harada, A.; Ohmiya, H.; Sawamura, M.* *Adv. Synth. Catal.* **2013**, *355*, 647-652. (10.1002/adsc.201200949)
- (15) Copper-Catalyzed Enantioselective Allylic Substitution with Alkylboranes
Shido, Y.; Yoshida, M.; Tanabe, M.; Ohmiya, H.*; Sawamura, M.* *J. Am. Chem. Soc.* **2012**, *134*, 18573-18576. (10.1021/ja3093955)
- (16) Conjugate Reduction of α,β -Unsaturated Carbonyl and Carboxyl Compounds with Poly(methylhydrosiloxane) Catalyzed by a Silica-Supported Compact Phosphane–Copper Complex
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- (20) Reversible 1,3-Anti/Syn Stereochemical Courses in Copper-Catalyzed γ -Selective Allyl-Alkyl Coupling between Chiral Allylic Phosphates and Alkylboranes
Nagao, K.; Yokobori, U.; Makida, Y.; Ohmiya, H.*; Sawamura, M.* *J. Am. Chem. Soc.* **2012**, *134*, 8982-8987. (10.1021/ja302520h)
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- (23) Regio- and Stereocontrolled Introduction of Secondary Alkyl Groups to Electron-Deficient Arenes through Copper-Catalyzed Allylic Alkylation
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- (27) Rh-Catalyzed *Ortho*-Selective C–H Borylation of N-Functionalized Arenes with Silica-Supported Bridgehead Monophosphine Ligands
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- (44) Copper-Catalyzed γ -Selective and Stereospecific Allyl-Aryl Coupling between (Z)-Acyclic and Cyclic Allylic Phosphates and Arylboronates
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2. 学会発表等 (国内外の招待講演および国際会議での発表状況)

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- (2) Silica-supported Tripod Phosphine: Application to Transition Metal Catalysis
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- (22) Construction of Medium-Sized Rings through Gold-Catalyzed Cyclizations of Acetylenic Silyl Enol Ethers: Impact of Ligand Cavity Sizes.
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(43) コンパクトなホスフィン配位子の固相担持による遷移金属錯体触媒の設計

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(44) Palladium-Catalyzed γ -Selective and Stereospecific Allyl-Aryl Coupling between Allylic Esters and Arylboronic Acids.

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- (46) Mechanistic Studies on Palladium-Catalyzed Allyl-Aryl Coupling between Allylic Acetates and Arylboronic Acids.
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- (49) Phosphinated Designer Surfaces for Use in Catalytic Organic Synthesis.
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3. 特許

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国立大学法人北海道大学, 澤村正也、岩井智弘、原田友哉
特開 2013-045650, 2013.3.7.

4. 学会・シンポジウム等の開催状況

該当なし

5. 受賞等

- (1) 澤村正也 (A01 班 公募班員)
平成 25 年度北海道大学研究総長賞, 2014.3.4
- (2) 澤村正也 (A01 班 公募班員)
Asian Core Program Lectureship Award, 2013.11.28
- (3) 澤村正也 (A01 班 公募班員)
Asian Core Program Lectureship Award, 2012.12.14
- (4) 川守田創一郎 (博士 3 年)
ポスター賞 第 59 回有機金属化学討論会, 2012.9.13-15.
- (5) 長尾一哲 (修士 2 年)
優秀ポスター賞 第 24 回万有札幌シンポジウム, 2012.7.7.

- (6) 澤村正也 (A01 班 公募班員)
第 29 回 学術賞 日本化学会、2012.3.28
- (7) 槇田祐輔 (博士 2 年)
学生講演賞 日本化学会第 92 春季年会, 2012.3.25–28.
- (8) 伊藤英人 (博士 3 年)
第 2 回育志賞 日本学術振興会、2012.3.1
- (9) 川守田創一郎 (博士 2 年)
優秀ポスター発表賞 第 108 回触媒討論会 2011.9.21
- (10) 川守田創一郎 (博士 2 年)
Best Presentation Award, The 1st Junior International Conference on Cutting-Edge Organic Chemistry in Asia, 2011.12.17.

6. 新聞報道等

該当なし

7. 国民との科学・技術対話

該当なし

8. 領域内の共同研究の準備・実施状況とその成果

- (1) 共同研究先：分子科学研究所，魚住研究室 (A01 班，公募班員)
派遣人員 (派遣)：川守田創一郎 (博士 1 年)
派遣期間 (受入)：2011.1.19-2011.1.26
共同研究内容：SR-MAS-NMR によるシリカ担持 SMAP 触媒の反応挙動解析
共同研究成果：学会発表
- (2) 共同研究先：東北大学，土井研究室 (A03 班，公募班員)
共同研究内容：クロスカップリング試験用化合物の提供を受け、有効な触媒の探索を行った。
共同研究成果：有効な触媒系はまだ見つかっていない。
- (3) 共同研究先：分子科学研究所，魚住研究室 (A03 班，公募班員)
共同研究内容：シリカ担持 SMAP 触媒のフロー合成系への応用のため、研究手法の議論と化合物提供を行った。
共同研究成果：フロー合成のための反応条件の探索を行っている。