

平成23年度 研究業績

澤村正也 (北海道大学大学院理学研究院、A01班 公募班員)

1. 発表論文等 (査読付き論文, 著書, 総説等の発表状況)

- (1) 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*, in press.
- (2) Functional Group Tolerable Synthesis of Allylsilanes through Copper-Catalyzed γ -Selective Allyl-Alkyl Coupling between Allylic Phosphates and Alkylboranes.
Nagao, K.; Ohmiya, H.; Sawamura, M. *Synthesis*. **2012**, *44*, in press.
- (3) Regio- and Stereocontrolled Introduction of Secondary Alkyl Groups to Electron-Deficient Arenes through Copper-Catalyzed Allylic Alkylation.
Makida, Y.; Ohmiya, H.; Sawamura, M. *Angew. Chem. Int. Ed.* **2012**, *51*, 4122-4127.
- (4) Synthesis of Conjugated Allenes through Copper-Catalyzed γ -Selective and Stereospecific Coupling between Propargylic Phosphates and Aryl- or Alkenylboronates.
Yang, M.; Yokokawa, N.; Ohmiya, H.; Sawamura, M. *Org. Lett.* **2012**, *14*, 816-819.
- (5) Copper(I)-Catalyzed Allylic Substitution of Silyl Nucleophiles through Si-Si Bond Activation.
Ito, H.; Horita, M.; Sawamura, M. *Adv. Synth. Catal.* **2012**, *354*, 813-817.
- (6) Efficient Preparation of β -Branched γ,δ -Unsaturated Esters through Copper-Catalyzed Allylic Alkylation of Ketene Silyl Acetal.
Li, D.; Ohmiya, H.; Sawamura, M. *Synthesis*. **2012**, *44*, 1304-1307.
- (7) Rh-Catalyzed Ortho-Selective C-H Borylation of N-Functionalized Arenes with Silica-Supported Bridgehead Monophosphine Ligands.
Kawamorita, S.; Miyazaki, T.; Ohmiya, H.; Iwai, T.; Sawamura, M. *J. Am. Chem. Soc.* **2011**, *133*, 19310-19313.
- (8) General Approach to Allenes through Copper-Catalyzed γ -Selective and Stereospecific Coupling between Propargylic Phosphates and Alkylboranes.
Ohmiya, H.; Yokobori, U.; Makida, Y.; Sawamura, M. *Org. Lett.* **2011**, *13*, 6312-6315.
- (9) Palladium-Catalyzed Borylation of Sterically Demanding Aryl Halides with Silica-Supported Compact Phosphane Ligand.
Kawamorita, S.; Ohmiya, H.; Iwai, T.; Sawamura, M. *Angew. Chem. Int. Ed. (VIP)* **2011**, *50*, 8363-8366.
- (10) Intramolecular Hydroamination of Alkynic Sulfonamides Catalyzed by

- Gold-Triethynylphosphine Complex: Construction of Azepine Frameworks by 7-Exo-dig Cyclization.
Ito, H.; Harada, T.; Ohmiya, H.; Sawamura, M. *Beilstein. J. Org. Chem.* **2011**, *7*, 951-959.
- (11) Mechanistic Insight into the Anomalous syn-Selectivity Observed During the Addition of Allenylboronates to Aromatic Aldehydes.
Sasaki, Y.; Sawamura, M.; Ito, H. *Chem. Lett.* **2011**, *40*, 1044-1046.
- (12) Copper-Catalyzed Conjugate Additions of Alkylboranes to Aryl α,β -Unsaturated Ketones.
Ohmiya, H.; Shido, Y.; Yoshida, M.; Sawamura, M. *Chem. Lett.* **2011**, *40*, 928-930.
- (13) Copper-Catalyzed γ -Selective and Stereospecific Allylic Alkylation of Ketene Silyl Acetals.
Ohmiya, H.; Tanabe, M.; Sawamura, M. *Org. Lett.* **2011**, *13*, 1086-1088.
- (14) Copper(I)-Catalyzed Regioselective Monoborylation of 1,3-Enynes with an Internal Triple Bond: Selective Synthesis of 1,3-Dienylboronates and 3-Alkynylboronate.
Sasaki, Y.; Horita, Y.; Zhong, C.; Sawamura, M.; Ito, H. *Angew. Chem. Int. Ed.* **2011**, *50*, 2778-2782.
- (15) Copper-Catalyzed Conjugate Additions of Alkylboranes to Imidazolyl α,β -Unsaturated Ketones: Formal Reductive Conjugate Addition of Terminal Alkenes.
Ohmiya, H.; Yoshida, M.; Sawamura, M. *Org. Lett.* **2011**, *13*, 482-485.
- (16) Sulfonamidoquinoline-Palladium(II) Dimer Complex As a Catalyst Precursor for Palladium-Catalyzed γ -Selective and Stereospecific Allyl-Aryl Coupling Reaction between Allylic Acetates and Arylboronic Acids.
Makida, Y.; Ohmiya, H.; Sawamura, M. *Chem. Asian J.* **2011**, *6*, 410-414.

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）

- (1) 「配位平衡と反応空間の高度制御に基づく遷移金属錯体触媒の設計」澤村 正也, 日本化学会第 92 春季年会 学術賞受賞講演, 横浜市, 2012.3.25 – 28 (口頭発表).
- (2) Enantioselective Conjugate Addition of Alkylboranes Catalyzed by Chiral Copper-NHC Complex.
Ohmiya, H.; Makida, Y.; Ohmiya, H.; Sawamura, M. The 5th GCOE International Symposium (Hokkaido University Global COE Program), Sapporo. Japan, 2012.2.21 – 22 (ポスター発表) .
- (3) C–H/C–Cl Borylation Catalyzed by Transition-Metal Complexes with Silica-Supported Caged Phosphines.
Iwai, T.; Kawamorita, S.; Miyazaki, T.; Ohmiya, H.; Sawamura, M. The 5th GCOE

International Symposium (Hokkaido University Global COE Program), Sapporo, Japan, 2012.2.21 – 22 (ポスター発表) .

- (4) Enantioselective Alkynylation of Aldehydes Based on Cooperative Catalysis of Copper-Chiral Hydroxy Amino Phosphine Complexes.

Ishii, T.; Ohmiya, H.; Sawamura, M. The 5th GCOE International Symposium (Hokkaido University Global COE Program), Sapporo, Japan, 2012.2.21 – 22 (ポスター発表) .

- (5) Synthesis of Allylsilanes through Copper-Catalyzed γ -Selective and Stereospecific Allyl-Alkyl Coupling.

Nagao, K.; Ohmiya, H.; Sawamura, M. The 5th GCOE International Symposium (Hokkaido University Global COE Program), Sapporo, Japan, 2012.2.21 – 22 (ポスター発表) .

- (6) CRC International Symposium on Green&Sustainable Catalysis: from Theoretical and Fundamental Aspects to Catalyst Design.

Kawamorita, S.; Ohmiya, H.; Iwai, T.; Sawamura, M. The 5th GCOE International Symposium (Hokkaido University Global COE Program), Sapporo, Japan, 2012.1.26-27 (ポスター発表) .

- (7) Directed Ortho Borylation of Functionalized Arenes Catalyzed by a Silica-Supported Bridgehead Phosphine-Metal Complexes.

Kawamorita, S.; Ohmiya, H.; Iwai, T.; Sawamura, M. The 1st Junior International Conference on Cutting-Edge Organic Chemistry in Asia, Xiamen, China, 2011.12.9-11 (ポスター発表) .

- (8) Synthesis of Arylboronates through Transition Metal Catalysis with Immobilized Monophosphine Ligands.

Sawamura, M. IME Boron XIV, Niagara Falls, Canada, Sept 11-15, 2011 (口頭発表).

- (9) Synthesis of Axially Chiral Allenes through Copper-Catalyzed Cross-Coupling between Propargylic Phosphates and Organoboron Compounds.

Sawamura, M. 14TH Asian Chemical Congress, Bangkok, Thailand, Sept 5-8, 2011 (口頭発表).

- (10) Copper-Catalyzed Carbon-Carbon Bond Formation Reactions with Alkylboranes.

Ohmiya, H.; Yokobori, U.; Yoshida, M.; Nagao, K.; Tanabe, M.; Makida, Y.; Sawamura, M. OMCOS16, 16th International Symposium on Organometallic Chemistry Directed towards Organic Synthesis, Shanghai, China, 2011.7.24-28 (ポスター発表).

- (11) Sulfonamidoquinoline/Palladium(II)-Dimer Complex as

a Catalyst Precursor for Palladium-Catalyzed γ -Selective Allyl-Aryl Coupling Reaction.

Makida, Y.; Ohmiya, H.; Sawamura, M. OMCOS16, 16th International Symposium on

Organometallic Chemistry Directed towards Organic Synthesis, Shanghai, China, 2011.7.24-28 (ポスター発表).

- (12) 「環境にやさしい有機ホウ素化合物の合成法」 澤村 正也, 大阪大学「環境月間」講演会, 大阪, 2011.6.3(口頭発表).

3. 特許

該当なし

4. 学会・シンポジウム等の開催状況

該当なし

5. 受賞等

- (1) 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
- (2) 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.
- (3) 伊藤英人 (博士3年)
第2回育志賞 日本学術振興会、2012.3.1
- (4) 澤村正也 (A01班 公募班員)
第29回学術賞 日本化学会、2012.3.28

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：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。