

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) Asymmetric Synthesis of Chiral Spiro Bis(isoxazoline) and Spiro (Isoxazole-Isoxazoline) Ligands

Takenaka, K.; Nagano, T.; Takizawa, S.; Sasai, H.* *Tetrahedron: Asymmetry* **2010**, *21*, 379-381. (10.1016/j.tetasy.2010.03.006)

- (2) Enantioselective 6-Endo-Trig Wacker-Type Cyclization of 2-Geranylphenols: Application to Facile Synthesis of (-)-Cordiachromene

Takenaka, K.; Tanigaki, Y.; Patil, M. L.; Rao, C. V. L.; Takizawa, S.; Suzuki, T.; Sasai, H.* *Tetrahedron: Asymmetry* **2010**, *21*, 767-770. (10.1016/j.tetasy.2010.04.060)

- (3) Acid-Base Organocatalysts for the Aza-Morita-Baylis-Hillman Reaction of Nitroalkenes

Takizawa, S.; Horii, A.; Sasai, H.* *Tetrahedron: Asymmetry* **2010**, *21*, 891-894. (10.1016/j.tetasy.2010.05.027)

- (4) Enantioselective Wacker-Type Cyclization of 2-Alkenyl-1,3-Diketones Promoted by Pd-SPRIX Catalyst

Takenaka, K.; Mohanta, S. C.; Patil, M. L.; Rao, C. V. L.; Takizawa, S.; Suzuki, T.; Sasai, H.* *Org. Lett.* **2010**, *12*, 3480-3483. (10.1021/ol1013069)

- (5) Formal Total Synthesis of Ottelione Using Iridium-Catalyzed Oxidative Desymmetrization

Suzuki, T.; Ghozati, K.; Zhou, D.-Y.; Katoh, T.; Sasai, H.* *Tetrahedron* **2010**, *66*, 7562-7568. (10.1016/j.tet.2010.07.047)

- (6) Enantioselective Synthesis of Isoindolines: Organocatalyzed Domino Process Based on the aza-Morita-Baylis-Hillman (aza-MBH) Reaction

Takizawa, S.; Inoue, N.; Hirata, S.; Sasai, H.* *Angew. Chem. Int. Ed.* **2010**, *49*, 9725-9729. (10.1002/anie.201004547)

- (7) Pd-Catalyzed 5-Endo-Trig-Type Cyclization of β,γ -Unsaturated Carbonyl Compounds: an Efficient Ring Closing Reaction to Give γ -Butenolides and 3-Pyrrolin-2-ones

Bajracharya, G. B.; Koranne, P. S.; Nadaf, R. N.; Gabr, R. K. M.; Takenaka, K.; Takizawa, S.; Sasai, H.* *Chem. Commun.* **2010**, *46*, 9064-9066. (10.1039/c0cc02352c)

- (8) An Enantioselective Organocatalyzed aza-MBH Domino Process: Application to the Facile Synthesis of Tetrahydropyridines

Takizawa, S.; Inoue, N.; Sasai, H.* *Tetrahedron Lett.* **2011**, *52*, 377-380. (10.1016/j.tetlet.2010.11.045)

- (9) Pd(II)-SPRIX Catalyzed Enantioselective Construction of Pyrrolizines/Pyrroloindoles Employing Molecular Oxygen As the Sole Oxidant
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- (10) Chlorinative Cyclization of 1,6-Enynes by Enantioselective Palladium(II)/Palladium(IV) Catalysis
Takenaka, K.; Hashimoto, S.; Takizawa, S.; Sasai, H.* *Adv. Synth. Catal.* **2011**, *353*, 1067-1070. (10.1002/adsc.201000926)
- (11) Enantioselective Cyclization of 4-Alkenoic Acids via an Oxidative Allylic C-H Esterification
Takenaka, K.; Akita, M.; Tanigaki, Y.; Takizawa, S.; Sasai, H.* *Org. Lett.* **2011**, *13*, 3506-3509. (10.1021/ol201314m)
- (12) A Bifunctional Spiro-Type Organocatalyst with High Enantiocontrol: Application to the Aza-Morita-Baylis-Hillman Reactions
Takizawa, S.; Kiriya, K.; Ieki, K.; Sasai, H.* *Chem. Commun.* **2011**, *47*, 9227-9229. (10.1039/C1CC12784E)
- (13) Synthesis of Spiro Bis(1,2,3-triazolium) Salts As Chiral Ionic Liquids
Yoshida, Y.; Takizawa, S.; Sasai, H.* *Tetrahedron Lett.* **2011**, *52*, 6877-6879. (10.1016/j.tetlet.2011.09.152)
- (14) Enantioselective Synthesis of α -Alkylidene- γ -Butyrolactones: Intramolecular Rauhut-Currier Reaction Promoted by Acid/Base Organocatalysts
Takizawa, S.; Nguyen, T. M.-N.; Grossmann, A.; Enders, D.; Sasai, H.* *Angew. Chem., Int. Ed.* **2012**, *51*, 5423-5426. (10.1002/anie.201201542)
- (15) Design and Synthesis of Spiro Bis(1,2,3-triazolium) Salts As Chiral Ionic Liquids
Yoshida, Y.; Takizawa, S.; Sasai, H.* *Tetrahedron: Asymmetry* **2012**, *23*, 843-851. (10.1016/j.tetasy.2012.06.007)
- (16) Facile Synthesis of α -Methylidene- γ -Butyrolactones: Intramolecular Rauhut-Currier Reaction Promoted by Chiral Acid-Base Organocatalysts
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- (18) DFT Study on 5-Endo-Trig-Type Cyclization of 3-Alkenoic Acids Using Pd-SPRIX Catalyst: Importance of the Rigid Spiro Framework for Both Selectivity and Reactivity

- Gabr, R. K. M.; Hatakeyama, T.; Takenaka, K.; Takizawa, S.; Okada, Y.; Nakamura, M.; Sasai, H.* *Chem. Eur. J.* **2013**, *19*, 9518-9525. (10.1002/chem.201203189)
- (19) *o*-(Hydroxyalkyl) P-Chirogenic Phosphines as Functional Chiral Lewis Bases
Rémond, E.; Bayardon, J.; Takizawa, S.; Rousselin, Y.; Sasai, H.*; Jugé, S. *Org. Lett.* **2013**, *15*, 1870-1873. (10.1021/ol400515e)
- (20) Carbonylation of Propargyl Carbamates with Palladium(II) Bisoxazoline Catalysts: Efficient Synthesis of 5-Methyl-3(2H)-furanones
Kusakabe, T.; Takahashi, T.; Shen, R.; Ikeda, A.; Dhage, Y. D.; Kanno, Y.; Inouye, Y.; Sasai, H.*; Mochida, T.; Kato, K. *Angew. Chem. Int. Ed.* **2013**, *52*, 7845-7849. (10.1002/anie.201303684)
- (21) Enantioselective Multicatalytic Synthesis of α -Benzyl- β -hydroxyindan-1-ones
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Sridharan, V.; Fan, L.; Takizawa, S.; Suzuki, T.; Sasai, H.* *Org. Biomol. Chem.* **2013**, *11*, 5936-5943. (10.1039/C3OB41103F)
- (23) P-Chirogenic Organocatalysts: Application to the aza-Morita-Baylis-Hillman (aza-MBH) Reaction of Ketimines
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- (24) Organocatalyzed Formal [2+2] Cycloaddition of Ketimines with Allenates: Facile Access to Azetidines with a Chiral Tetrasubstituted Carbon Stereogenic Center
Takizawa, S.; Arteaga, F. A.; Yoshida, Y.; Suzuki, M.; Sasai, H.* *Org. Lett.* **2013**, *15*, 4142-4145. (10.1021/ol401817q)
- (25) Chiral Bifunctional Organocatalysts Bearing a 1,3-Propanediamine Unit for the aza-MBH Reaction
Hirata, S.; Tanaka, K.; Matsui, K.; Arteaga, F. A.; Yoshida, Y.; Takizawa, S.; Sasai, H.* *Tetrahedron: Asymmetry* **2013**, *24*, 1189-1192. (10.1016/j.tetasy.2013.08.005)
- (26) Enantioselective Pd(II)/Pd(IV) Catalysis Utilizing SPRIX Ligand: Efficient Construction of Chiral 3-Oxy-Tetrahydrofurans
Takenaka, K.; Dhage, Y. D.; Sasai, H.* *Chem. Commun.* **2013**, *49*, 11224-11226. (10.1039/C3CC44797A)
- (27) Enantioselective Oxidative-coupling of Polycyclic Phenols

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(28) Enantioselective Organocatalyzed Formal [4+2] Cycloaddition of Ketimines with Allenates: Easy Access to a Tetrahydropyridine Framework with a Chiral Tetrasubstituted Carbon Stereogenic Center

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(2) Direct C-C Bond Formation (Henry, Aza-Henry)

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(3) C-C Bond Formation: (aza) Morita-Baylis-Hillman Reaction

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(4) Metal-catalyzed Enantio- and Diastereoselective C-C Bond-forming Reactions in Domino Processes

Takizawa, S.; Sasai, H. In *Domino Reactions: Concepts for Efficient Organic Synthesis*, Tietze, L. F. Ed, Wiley-VCH Verlag GmbH & Co. KGaA; Germany, 2014; Chapter 11, pp 419-462

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- (3) Novel Asymmetric Domino Reactions Promoted by Acid-Base Organocatalysts
Sasai, H. 3rd Aachen-Osaka Joint Symposium, Aachen, Germany, 2010.9.6-7 (口頭発表) .
- (4) Novel Catalytic Enantioselective Reactions Promoted by a Pd-SPRIX Complex
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- (7) Development of Chiral Bifunctional Organocatalysts
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- (8) Enantioselective Oxidative Coupling of 2-Naphthols Using Dinuclear Vanadium Complex
Takizawa, S.; Katayama, T.; Doss, R.; Sasai, H. The International Chemical Congress of Pacific Basin Societies (PACIFICHEM 2010), Honolulu, USA, 2010.12.15-20 (口頭発表) .
- (9) Oxidative Desymmetrization of Diols by Iridium Catalyst
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- (10) Enantioselective Synthesis of γ -Lactones via Intramolecular Wacker-type Cyclization Catalyzed by Pd-SPRIX
Akita, M.; Tanigaki, Y.; Takenaka, K.; Takizawa, S.; Sasai, H. The International Chemical Congress of Pacific Basin Societies (PACIFICHEM 2010), Honolulu, USA, 2010.12.15-20 (ポスター発表) .

- (11) DFT Study on 5-Endo-Trig Type Cyclization of β,γ -Unsaturated Carboxylic Acids Using Pd-SPRIX Catalyst
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- (12) Enantioselective Aza-Morita-Baylis-Hillman (Aza-MBH) Domino Reactions Promoted by Acid-Base Organocatalyst
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- (15) Development of Multifunctional Asymmetric Catalysts and Application to Catalytic Asymmetric Synthesis
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(29) 新規エナンチオ選択的触媒反応系の開拓

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5. 受賞等

(1) 笹井宏明 (教授)

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(5) Lin, Xianjin (博士3年)

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6. 新聞報道等

7. 国民との科学・技術対話

8. 領域内の共同研究の準備・実施状況とその成果

共同研究先：京都大学化学研究所，中村・畠山研究室（A01班，公募班員）

派遣人員：Gabr, R. K. M. (博士研究員)

派遣期間：2011.4.1－2011.12.31

共同研究内容：密度汎関数計算による反応機構解析

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