岡山大学教育学部　理科教育講座　　有機化学研究室

准教授　石川　彰彦

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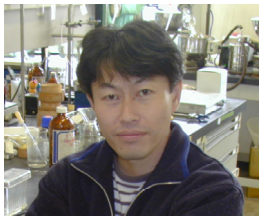

専門分野：　有機化学全般、複素環化学、生理活性物質合成

最近の研究テーマ

医薬品開発を指向した複素環類（インドール、インダゾール、タキソフラビン等）の新規合成法の開発

カルバニオン、カルボカチオンの反応制御

抗ウイルス剤の効率的合成法の開発

（インフルエンザ治療薬：Flu-ノイラミダーゼ阻害剤、タミフル新規合成法など）

抗腫瘍活性化合物の合成研究　　etc.

研究室所属メンバー

（修士２年）　安藤達也

（修士１年）　佐藤仁美

（学部４年生）　瀬川健治、松岡将司、日向惇

（学部３年生）　有田和樹、安藤拓、石本彩、岡田友尊、筒井美寿紀、横山綾

研究業績等（2000~2009）

（ヒドロキシルアミン関連化学に関する論文）

１　Intramolecular Cycloaddition Reactions of Silyl Nitronate Tethered to Vinylsilyl Group: 2-Nitroalkanols as Precursors for Amino Polyols.
Takayuki Kudoh, Teruhiko Ishikawa, Yoshiharu Shimizu, and Seiki Saito
Org. Lett., **2003**, *5*, 3875–3878.

２　ヒドロキシルアミン誘導体の潜在的官能基性の探索と新規合成プロセスの開発
Teruhiko Ishikawa, Takayuki Kudoh, and Seiki Saito.
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３　Novel Ene-like Cycloisomerization Reaction of Nitrile Oxides with a Tethered Allyltrimethylsilyl Group
Teruhiko Ishikawa, Jin Urano, Yasuhiro Kobayashi, Shushiro Ikeda, and Seiki Saito
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４ Dicobalt Octacarbonyl-Promoted Rearrangement of 4-Isoxazolines to Acylaziridines: Dramatic Rate Acceleration with Very High Substrate Tolerance
Teruhiko Ishikawa, Takayuki Kudoh, Juri Yoshida, Ayako Yasuhara, Shinobu Manabe, and Seiki Saito
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5 Intramolecular Diels-Alder Reactions Employing Hydroxamate Tethers: The First Example and Promising Prospects

Teruhiko Ishikawa, Mami Senzaki, Ryuuichirou Kadoya, Takashi Morimoto, Naoki Miyake, Miyoko Izawa, Seiki Saito, and Hisayoshi Kobayashi

J. Am. Chem. Soc. **2001**,*123*, 4607–4608.

6 Novel [2,3]-Sigmatropic Rearrangement for Carbon-Nitrogen Bond Formation

Teruhiko Ishikawa, Masatomo Kawakami, Miyuki Fukui, Ayako Yamashita, Jin Urano, and Seiki Saito

J. Am. Chem. Soc. **2001**,*123*, 7734–7735.

7 Simultaneous Discrimination of Diastereotopic Groups and Faces: The first Example in Intramolecular [3+2] and [2+2+1] Cycloaddition Reactions

Teruhiko Ishikawa, Kazuo Shimizu, Hirokazu Ishii, Shushiro Ikeda, and Seiki Saito

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8 Application of the Silicon-Tether Strategy for Controlling the Regioselectivity and Diastereoselectivity of Intramolecular Nitrone Cycloadditions for Aminopolyol Synthesis

Teruhiko Ishikawa, Takauki Kudoh, Kazunori Shigemori, and Seiki Saito.

J. Am. Chem. Soc. **2000**,*122*, 7633–7637.

（炭素骨格構築法、および生理活性物質の全合成に関する論文）

9 Domino Double Michael−Claisen Cyclizations: A Powerful General Tool for Introducing Quaternary Stereocenters at C(4) of Cyclohexane-1,3-diones and Total Synthesis of Diverse Families of Sterically Congested Alkaloids. Teruhiko Ishikawa, Kazuhiro Kudo, Ken Kuroyabu, Satoshi Uchida, Takayuki Kudoh, and Seiki Saito

J. Org. Chem. **2008**, 79, 7498–7508.

10 Intramolecular Anionic Diels-Alder Reactions of 1-Aryl-4-oxahepta-1,6- diynes Systems in DMSO

Takayuki Kudo, Tomoko Mori, Mituto, Shirahama, Masasi Yamada, Teruhiko Ishikawa, and Seiki Saito

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11 Two-Directional Elaboration of Hydroxyacetone under Thermodynamically Controlled Conditions: Allylation or 2-Propynylation and Aldol Reaction. Teruhiko Ishikawa, Toshiaki Aikawa, Eiko Ohata, Takako Iseki, Satoshi Maeda, Takashi Matsuo, Tatsuo Fujino, and Seiki Saito

J. Org. Chem. **2007**, *72*, 435–441.

12 Diastereoselective Total Synthesis of Isocarbacyclin from L-Ascorbic Acid

Teruhiko Ishikawa, Hirokazu Ishii, Kazuo Shimizu, Hiroe Nakao, Jin Urano, Takayuki Kudo, and Seiki Saito

J. Org. Chem. **2004**, *69*, 8133–8135

13 Conversion of D-Glucose to Cyclitol with hydroxymethyl Substituent via Intramolecular Silyl Nitronate Cycloaddition Reaction: Application to Total Synthesis of (+)-Cyclophellitol

Teruhiko Ishikawa, Yoshiharu Shimizu, Takayuki Kudoh, and Seiki Saito

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14 Intramolecular Catalytic Friedel-Crafts Reactions with Allenyl Cations for the Synthesis of Quinolines and Their Analogues.

Teruhiko Ishikawa, Shinobu Manabe, Toshiaki Aikawa, Takayuki Kudo, and Seiki Saito

Org. Lett. **2004**, *6*, 2361–2364.

15 Diastereoselective Allylations of Allyl-Propargyl Hybrid Cations: Synthesis of Conjugated 1,5-Dien-7-yne Frameworks Bearing C(4)-Stereogenic Centers

Teruhiko Ishikawa, Toshiaki Aikawa, Yumiko Mori, and Seiki Saito

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１６　Lewis Acid-Catalyzed Nucleophilic Substitutions of with Propargylic and Allylic Silyl Ethers. with Enol Silyl Ethers　　Teruhiko Ishikawa, Toshiaki Aikawa, Yumiko Mori, and Seiki Saito
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１７　Catalytic Alkynylation of Ketones and Aldehydes using Quaternary Ammonium Hydroxide Bases
Teruhiko Ishikawa, Tomohiro Mizuta, Kumiko Hagiwara, Toshiaki Aikawa, Takayuki Kudo and Seiki Saito
J. Org. Chem. **2003**, *68*, 3702–3705.

１８ Novel Carbon-Carbon Bond Forming Reactions Using Carbocations Produced from Substituted Propargyl Silyl Ethers by the Action of TMSOTf.　　Teruhiko Ishikawa, Masamitu Okano, Toshiaki Aikawa, and Seiki Saito
J. Org. Chem. **2001**, *66*, 4635–4642.

１９ Revisiting [3+3] Route to 1,3-Cyclohexanedione Frameworks: Hidden Aspect of Thermodynamically Controlled Enolates
Teruhiko Ishikawa, Ryuichiro Kadoya, Masaki Arai, Haruka Takahashi, Yumi Kaisi, Tomohiro Mizuta, Kazusa Yoshikai, and Seiki Saito
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（連続反応系による新規ヘテロ環合成法に関する論文）

２０　One-pot Multi-step Synthesis of 4-Acetoxy-2-amino-3-arylbenzofurans from Cyclohexane-1,3-diones and 1-Aryl-2- nitroethylenes.　　Teruhiko Ishikawa, Tadashi Miyahara, Mami Asakura, Syuuichi Higuchi, Yayoi Miyauchi, and Seiki Saito
Org. Lett. **2005**, *7*, 1211–1214

２１　Efficient Synthesis of 1,3,5-Trisubstituted (Pyrrol-2-yl)acetic Acid　Esters via Dual Nucleophilic Reactions of Sulfonamides or Carbamate with 4-Trimethyl-siloxy-(5*E*)-hexen-2-ynoates: Lewis Acid-Catalyzed S_N1 and Intramolecular Michael Addition
Teruhiko Ishikawa, Toshiaki Aikawa, Shinichiro Watanabe, and Seiki Saito
Org. Lett. **2006**, *8*, 3881–3884.

２２　Synthesis of 3-Acetoxyacetanilide Derivatives by means of Semmler–Wolff-type Aromatization Reaction of Cyclohexane-1,3-dione Monooximes
Teruhiko Ishikawa, Masaki Arai, Hironori Nishiuchi, Hiroshi Ishiguro and Seiki Saito
Chem. Lett. **2008**, *37*, 1066–1067.

２３　Synthesis of 4-Acetoxyindoles and Related Derivatives by means of Air-oxidation of 4-Oxo-4,5,6,7-tetrahydroindoles Obtained from Nitroalkenes and Cyclohexane-1,3-diones
Masaki Arai, Yayoi Miyauchi, Tadashi Miyahara, Teruhiko Ishikawa, and Seiki Saito
Synlet. **2009**, 122–126.

２００４年度　有機合成化学協会研究企画賞（帝人ファーマ）
新規カスケード型反応の開発と複素環合成の効率化

特許（タミフル新規合成法関連）
特願 2009-138720　　他２件