

Curriculum Vitae

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Date of birth: March 30, 1958
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Employment:

04/1997- Professor, Department of Chemistry, Gakushuin University
04/1994-03/1997 Associate Professor, Department of Chemistry, Gakushuin University
(04/1992-03/1993 Visiting Scholar, Department of Chemistry, Stanford University)
07/1988-03/1994 Assistant Professor, Department of Applied Chemistry, Ehime University
04/1985-06/1988 Research Chemist, Shionogi Research Laboratories, Shionogi & Co., Ltd.

Education:

03/1985 Ph.D. The University of Tokyo
03/1982 M.Sc. Department of Chemistry, The University of Tokyo
02/1980 B.Sc. Department of Chemistry, The University of Tokyo

Awards:

2017 Synthetic Organic Chemistry Award, Japan
2016 Humboldt Research Award
2016 ACS, Arthur C. Cope Scholar Award
2012 JSPC (The Japanese Society for Process Chemistry) Award for Excellence
2012 Nagoya Silver Medal
2009 The Chemical Society of Japan Award for Creative Work for 2009
2009 SSOCJ(The Society of Synthetic Organic Chemistry, Japan) Daiichi-Sankyo Award for Medicinal Organic Chemistry 2009
1997 1997 Takeda Pharmaceutical Company Award in Synthetic Organic Chemistry, Japan

Honorary Lectureships & Visiting Professorships:

2017 LabEx CHARMMAT Visiting Professor, University of Paris-Saclay (France)
2017 SUSTC Chemical Sciences Lectureship, South University of Science and Technology of China, Shenzhen, (P. R. China)

Research Interest:

Synthetic Organic Chemistry, Organocatalysis, Metal-mediated reactions

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Important Publications

- 1) Enantioselective Mannich-type Reaction Catalyzed by a Chiral Brønsted Acid, Akiyama, T.; Itoh, J.; Yokota, K.; Fuchibe, K. *Angew. Chem. Int. Ed.* **2004**, *43* (12), 1566-1568.
- 2) Low Valent Niobium-Mediated Double Activation of C–F/C–H Bonds: Fluorene Synthesis from *o*-Arylated α,α,α -Trifluorotoluene Derivatives, Fuchibe, K.; Akiyama, T. *J. Am. Chem. Soc.* **2006**, *128* (5), 1434-1435.
- 3) Chiral Brønsted Acid Catalyzed Enantioselective Aza Diels-Alder Reaction of Brassard's Diene with Imines, Itoh, J.; Fuchibe, K.; Akiyama, T. *Angew. Chem. Int. Ed.* **2006**, *45* (29), 4796-4798.
- 4) Chiral Brønsted Acid Catalyzed Enantioselective Mannich-type Reaction, Yamanaka, M.; Itoh, J.; Fuchibe, K.; Akiyama, T. *J. Am. Chem. Soc.* **2007**, *129* (21), 6756-6764.
- 5) Stronger Brønsted Acid (Thematic Issue, Organocatalysis) Akiyama, T. *Chem. Rev.* **2007**, *107* (12), 5744-5758.
- 6) Chiral Phosphoric Acid Catalyzed Enantioselective Friedel-Crafts Alkylation of Indoles with Nitroalkenes-Cooperative Effect of MS 3Å, Itoh, J.; Fuchibe, K.; Akiyama, T. *Angew. Chem. Int. Ed.* **2008**, *47* (21), 4016-4018.
- 7) Expedient Synthesis of *N*-Fused Indoles: C-F Activation and C-H Insertion Approach, Fuchibe, K.; Kaneko, T.; Mori, K.; Akiyama, T. *Angew. Chem. Int. Ed.* (VIP article) **2009**, *48* (43), 8070-8073.
- 8) Chiral Phosphoric Acid Catalyzed Desymmetrization of meso-1,3-Diones: Asymmetric Synthesis of Chiral Cyclohexenones, Mori, K.; Katoh, T.; Suzuki, T.; Noji, T.; Yamanaka, M.; Akiyama, T. *Angew. Chem. Int. Ed.* **2009**, *48* (51), 9652-9654.
- 9) Expeditious Construction of a Carbobicyclic Skeleton via a sp^3 -C–H Functionalization: Hydride Shift from an Aliphatic Tertiary Position in an Internal Redox Process, Mori, K.; Sueoka, S.; Akiyama, T. *J. Am. Chem. Soc.* **2011**, *133* (8), 2424-2426.
- 10) Selective Activation of Enantiotopic C(sp^3)-Hydrogen by Means of a Chiral Phosphoric Acid: Asymmetric Synthesis of Chiral Tetrahydroquinoline Derivatives, Mori, K.; Ehara, K.; Kurihara, K.; Akiyama, T. *J. Am. Chem. Soc.* **2011**, *133* (16), 6166-6169.
- 11) Chiral Phosphoric Acid Catalyzed Transfer Hydrogenation: A Facile Synthetic Access to Highly Optically Active Trifluoromethylated Amines, Henseler, A.; Kato, M.; Mori, K.; Akiyama, T. *Angew. Chem. Int. Ed.* **2011**, *50* (35), 8180-8183.
- 12) Enantioselective Synthesis of Multisubstituted Biaryl Skeleton by Chiral Phosphoric Acid Catalyzed Desymmetrization/Kinetic Resolution Sequence, Mori, K.; Ichikawa, Y.; Kobayashi, M.; Shibata, Y.; Yamanaka, M.; Akiyama, T. *J. Am. Chem. Soc.* **2013**, *135* (10), 3964-3970.
- 13) Chiral Phosphoric Acid Catalyzed Oxidative Kinetic Resolution of Indolines Based on Transfer Hydrogenation to Imines, Saito, K.; Shibata, Y.; Yamanaka, M.; Akiyama, T. *J. Am. Chem. Soc.* **2013**, *135* (32), 11740-11743.
- 14) Double C(sp^3)-H Bond Functionalization Mediated by Sequential Hydride Shift/Cyclization Process: Diastereoselective Construction of Polyheterocycles, Mori, K.; Kurihara, K.; Yabe, S.; Yamanaka, M.; Akiyama, T. *J. Am. Chem. Soc.* **2014**, *136* (10), 3744-3747.

- 15) Benzothiazoline: Versatile Hydrogen Donor for Organocatalytic Transfer Hydrogenation, Zhu, C.; Saito, K.; Yamanaka, M.; Akiyama, T. *Acc. Chem. Res.* **2015**, 47 (2), 388-398.
- 16) Stronger Brønsted Acids; Recent Progress, Akiyama, T.; Mori, K. *Chem. Rev.* **2015**, 115 (17), 9277-9306.
- 17) Chiral Phosphoric Acid Catalyzed Kinetic Resolution of Indolines Based on Self-Redox Reaction, Saito, K.; Akiyama, T. *Angew. Chem. Int. Ed.* **2016**, 55 (9), 3148–3152.
- 18) Enantiodivergent Atroposelective Synthesis of Chiral Biaryls by Asymmetric Transfer Hydrogenation: Chiral Phosphoric Acid Catalyzed Dynamic Kinetic Resolution Strategy, Mori, K.; Itakura, T.; Akiyama, T. *Angew. Chem. Int. Ed.* **2016**, 55 (38), 11642-11646. DOI: 10.1002/anie.201606063.
- 19) Chiral Magnesium Bisphosphate Catalyzed Asymmetric Double C(sp³)–H Bond Functionalization Based on Sequential Hydride Shift/Cyclization Process, Mori, K.; Isogai, R.; Kamei, Y.; Yamanaka, M.; Akiyama, T. *J. Am. Chem. Soc.* **2018**, 140(20), 6203-6207. DOI:10.1021/jacs.8b02761.
- 20) Enantioselective Friedel-Crafts Alkylation Reaction of Indoles with α -Trifluoromethylated- β -nitrostyrenes Catalyzed by Chiral BINOL Metal Phosphate, Ibáñez, I.; Kaneko, M.; Kamei, Y.; Tsutsumi, R.; Yamanaka, M.; Akiyama, T. *ACS Catal.* **2019**, 9(8), 6903-6909. DOI: 10.1021/acscatal.9b01811. (highlighted in Synfacts)
- 21) Benzothiazolines as Radical Transfer Reagents: Hydroalkylation and Hydroacylation of Alkenes via Radical Generation under Photoirradiation Conditions, Uchikura, T.; Moriyama, K.; Toda, M.; Mouri, T.; Ibáñez, I.; Akiyama, T. *Chem. Commun.* **2019**, 55(75), 11171-11174. DOI: 10.1039/C9CC05336K. (Featured in Front Cover Picture)
- 22) Enantioselective Dehydrohydrogenation of 3-Indolylmethanols by the Combined Use of Benzothiazoline and Chiral Phosphoric Acid: Enantioselective Construction of Tertiary Carbon Center, Osakabe, H.; Saito, S.; Miyagawa, M.; Suga, T.; Uchikura, T. Akiyama, T. *Org. Lett.* **2020**, 22(6), 2225-2229. DOI: 10.1021/acs.orglett.0c00430
- 23) Metal- and Oxidant-Free Visible-Light Driven C–S Bond Formation Based on Electron Donor-Acceptor Excitation and Hydrogen Atom Transfer Combined System, Uchikura, T.; Hara, Y. Tsubono, K.; Akiyama, T. *ACS Org. Inorg. Au* **2021**, 1(1), 23-28. DOI: 10.1021/acsoiginorgau.1c00007.
- 24) Visible-Light Driven Enantioselective Radical Addition to Imines Enabled by Excitation of Chiral Phosphoric Acid–Imine Complex, Uchikura, T.; Kamiyama, N.; Mouri, T.; Akiyama, T. *ACS Catal.* **2022**, 12 (9), 5209–5216. DOI: 10.1021/acscatal.2c00993.
- 25) Enantioselective Friedel–Crafts Alkylation of Pyrroles with *N*-Unprotected Alkynyl Trifluoromethyl Ketimines, Uchikura, T.; Aruga, K.; Suzuki, R.; Akiyama, T. *Org. Lett.* **2022**, 24(25), 4699-4703. DOI: 10.1021/acs.orglett.2c01972.
- 26) Halogen-bonding assisted EDA-SET and HAT dual role photoreaction system by phenol catalyst and aryl iodides: Visible-light driven carbon–carbon bond formation, Uchikura, T.; Tsubono, K.; Hara, Y.; Akiyama, T. *J. Org. Chem.* **2022**, 87, 15499. DOI: 10.1021/acs.joc.2c02032
- 27) Enantioselective Synthesis of All-Carbon Quaternary Stereocenter by Chiral Brønsted Acid Catalyzed Friedel–Crafts Type Reaction between Pyrroles and 3-Indolylmethanols, Uchikura, T.;

- Sánchez-Sordo, I.; Yoshimura, T.; Makino, Y.; Osakabe, H.; Akiyama, T. *J. Org. Chem.* **2023**, DOI: 10.1021/acs.joc.2c02633.
- 28) Photoreduction of Trifluoromethyl Group: Lithium Ion Assisted Fluoride-Coupled Electron Transfer from EDA complex, Uchikura, T.; Akutsu, F.; Tani, H, Akiyama, T. *Chem. Eur. J.* **2024**, *30* (33), e202400658. DOI: 10.1002/chem.202400658. <https://doi.org/10.1002/chem.202400658>.
- 29) Enantioselective synthesis of 3-(*N*-indolyl)quinolines containing axial and central chiralities Yamanomoto, K.; Yamamoto, K.; Yoshida, S.; Sato, S.; Akiyama, T. *Chem. Commun.* **2024**, *60*(1), 582-585. DOI: 10.1039/d3cc05142k. <https://doi.org/10.1039/D3CC05142K>
- 30) Visible-Light-Driven Racemization of 1,1'-Binaphthyl-2,2'-diamine (BINAM) Derivatives, Uchikura, T.; Sato, M.; Kanno, Y.; Fukuda, Y.; Hara, Y.; Yamamoto, K.; Akiyama, T. *Org. Lett.* **2025**, *27*(8), 1912–1917. <https://pubs.acs.org/doi/10.1021/acs.orglett.5c00162>.