

## CURRICULUM VITAE

**Yoshitaka Hamashima, Ph. D.**

**Current Address:**

School of Pharmaceutical Sciences  
University of Shizuoka  
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**Personal Information:**

Date of Birth: June 9, 1974  
Citizenship: Japanese

**Current Status:**

Full Professor of Organic Chemistry at University of Shizuoka

**Education and Research Positions:**

4/1999- 3/2001	PhD course at the University of Tokyo (Prof. M. Shibasaki)
4/2001	Assistant professor at Tohoku University (Prof. M. Sodeoka's group)
9/2003	Received a Ph.D. degree from the University of Tokyo
5/2005	Lecturer at Tohoku University
4/2006-3/2008	Researcher at RIKEN (Prof. M. Sodeoka's group)
4/2008	Senior Researcher at RIKEN
5/2010	Associate Professor at University of Shizuoka (Prof. Kan's group)
4/2013	Full Professor at University of Shizuoka

**Ph.D Thesis:**

Development of Lewis acid-Lewis base bifunctional catalysts and their application to catalytic asymmetric cyanosilylation of aldehydes and ketones  
(Under the direction of Prof. Masakatsu Shibasaki)

### Awards:

- Meiji Seika Award in Synthetic Organic Chemistry, Japan (2003)
- Thieme Journal Award (2006)
- The PSJ Award for Young Scientists (2006)

### Research Interests:

- Design and synthesis of metal complexes and their applications to catalytic reactions
- Synthetic studies of fluorinated compounds and halogenation reactions
- Synthetic studies of biologically active natural and unnatural compounds

### Publications:

#### a) Peer-reviewed papers

- 69) “Practical Total Syntheses of Acromelic Acids A and B”  
M. Inai, H. Ouchi, A. Asahina, T. Asakawa, Y. Hamashima, and T. Kan  
*Chem. Pharm. Bull.* **2016**, in press.
- 68) “Synthesis of methylated catechins and theaflavins using 2-nitrobenzenesulfonyl group to protect and deactivate phenol”  
T. Kan, T. Asakawa, Y. Kawabe, A. Yoshida, Y. Aihara, T. Manabe, Y. Hirose, A. Sakurada, M. Inai, Y. Hamashima, T. Furuta, and T. Wakimoto  
*J. Antibiot.* **2016**, in press.
- 67) “Highly Enantioselective Bromocyclization of Allylic Amides with a P/P=O Double-site Lewis Base Catalyst”  
Y. Kawato, H. Ono, A. Kubota, Y. Nagao, N. Morita, H. Egami, and Y. Hamashima  
*Chem. Eur. J.* **2016**, *22*, 2127-2133.
- 66) “Benzylic C–H Trifluoromethylation of Phenol Derivatives”  
H. Egami, T. Ide, Y. Kawato, Y. Hamashima  
*Chem. Commun.*, **2015**, *51*, 16675-16678.
- 65) “Asymmetric Fluorolactonization with a Bifunctional Hydroxyl Carboxylate Catalyst”  
H. Egami, J. Asada, K. Sato, Y. Kawato, Y. Hamashima  
*J. Am. Chem. Soc.*, **2015**, *137*, 10132-10135.
- 64) “Stereocontrolled Total Syntheses of Optically Active Furofuran Lignans”  
M. Inai, R. Ishikawa, N. Yoshida, N. Shirakawa, Y. Akao, Y. Kawabe, T. Asakawa, M. Egi, Y. Hamashima, T. Kan  
*Synthesis*, **2015**, *47*, 3513-3521.
- 63) “2-[(Neopentyl glycolate)boryl]phenyl Triflates and Halides for Fluoride Ion-Mediated Generation of Functionalized Benzyne”  
T. Ikawa, R. Yamamoto, A. Takagi, T. Ito, K. Shimizu, M. Goto, Y. Hamashima, S. Akai

- Adv. Synth. Catal.*, **2015**, *357*, 2287-2300.
- 62) “Concise Synthesis of Binaphthol-derived Chiral Dicarboxylic Acids”  
H. Egami, K. Sato, J. Asada, Y. Kawato, Y. Hamashima  
*Tetrahedron*, **2015**, *71*, 6384-6388.
- 61) “Advanced dress-up chiral columns: New removable chiral stationary phases for enantioseparation of chiral carboxylic acids”  
K. Todoroki, Y. Ishii, T. Ide, J.-Z. Min, K. Inoue, X. Huang, W. Zhang, Y. Hamashima, T. Toyo’oka  
*Analytica Chimica Acta*, **2015**, *882*, 101-111.
- 60) “Enantioselective Bromocyclization of Allylic Amides Catalyzed by BINAP Derivatives”  
Y. Kawato, A. Kubota, H. Ono, H. Egami, Y. Hamashima  
*Org. Lett.*, **2015**, *17*, 1244-1247.
- 59) “Development of a highly efficient single-mode microwave applicator with a resonant cavity and its application to continuous flow syntheses”  
S. Yokozawa, N. Ohneda, K. Muramatsu, T. Okaoto, H. Odajima, T. Ikawa, J. Sugiyama, M. Fujita, T. Sawairi, H. Egami, Y. Hamashima, M. Egi, S. Akai  
*RSC Adv.*, **2015**, *5*, 10204-10210.
- 58) “Total Synthesis of (+)-Sesamin and (+)-Sesaminol”  
R. Ishikawa, N. Yoshida, Y. Akao, M. Inai, T. Asakawa, Y. Hamashima, T. Kan  
*Chem. Lett.* **2014**, *43*, 1572-1574.
- 57) “Dual Catalysis with Copper and Rhenium for Trifluoromethylation of Propargylic Alcohols: Efficient Synthesis of  $\alpha$ -Trifluoromethylated Enones”  
H. Egami, T. Ide, M. Fujii, T. Tojo, Y. Hamashima, M. Sodeoka  
*Chem. Eur. J.* **2014**, *20*, 12061-12065.
- 56) “Practical synthesis of natural plant-growth regulator 2-azahypoxanthine, its derivatives, and biotin-labeled probes”  
K. Ikeuchi, R. Fujii, S. Sugiyama, T. Asakawa, M. Inai, Y. Hamashima, J.-H. Choi, T. Suzuki, H. Kawagishi, T. Kan  
*Org. Biomol. Chem.*, **2014**, *2014*, *12*, 3813-3815.
- 55) “Practical Total Syntheses of Acromelic Acids A and B”  
H. Ouchi, A. Asahina, T. Asakawa, M. Inai, Y. Hamashima, T. Kan  
*Org. Lett.*, **2014**, *16*, 1980-1983.
- 54) “Stereocontrolled Total Synthesis of Hedyotol A”  
Y. Kawabe, R. Ishikawa, Y. Akao, A. Yoshida, M. Inai, T. Asakawa, Y. Hamashima, T. Kan  
*Org. Lett.*, **2014**, *16*, 1976-1979.
- 53) “Practical Synthesis of Kainoids: A New Chemical Probe Precursor and a Fluorescent Probe”  
S. Sasaki, H. Suzuki, H. Ouchi, T. Asakawa, M. Inai, R. Sakai, K. Shimamoto, Y. Hamashima, T. Kan  
*Org. Lett.*, **2014**, *16*, 564-567.
- 52) “Synthetic Studies of Fisetin, Myricetin and Nobiletin Analogs and Related Probe Molecules”

- A. Hiza, Y. Tsukaguchi, T. Ogawa, M. Inai, T. Asakawa, Y. Hamashima, T. Kan  
*HETEROCYCLES*, **2014**, 88, 1371-1396.
- 51) “Stereocontrolled total synthesis of sphingofungin E”  
K. Ikeuchi, M. Hayashi, T. Yamamoto, M. Inai, T. Asakawa, Y. Hamashima, T. Kan  
*Eur. J. Org. Chem.* **2013**, 30, 6789-6792.
- 50) “Chemoselective Hydrogenation Reaction of Unsaturated Bonds in the Presence of *o*-Nitrobenzenesulfonyl Group”  
A. Kawanishi, C. Miyamoto, Y. Yabe, M. Inai, T. Asakawa, Y. Hamashima, H. Sajiki, T. Kan  
*Org. Lett.*, **2013**, 15, 1306-1309.
- 49) “Synthesis of Theaflavin via Biomimetic Oxidative Coupling Reaction”  
Y. Kawabe, Y. Aihara, Y. Hirose, A. Sakurada, A. Yoshida, M. Inai, T. Asakawa, Y. Hamashima, T. Kan  
*Synlett*, **2013**, 479-482.
- 48) “Epidithiodiketopiperazine as a pharmacophore for protein lysine methyltransferase G9a inhibitors: Reducing cytotoxicity by structural simplification”  
S. Fujishiro, K. Dodo, E. Iwasa, Y. Sohtome, Y. Hamashima, A. Ito, M. Yoshida, M. Sodeoka  
*Bioorg. Med. Chem. Lett.* **2013**, 23, 733-736.
- 47) “Catalytic Desymmetrization of Cyclohexadienes via Asymmetric Bromolactonization”  
K. Ikeuchi, K. Ido, S. Yoshimura, T. Asakawa, M. Inai, Y. Hamashima, T. Kan  
*Org. Lett.* **2012**, 14, 6016-6019.
- 46) “Stereocontrolled Total Synthesis of (+)- UCS1025A”  
K. Uchida, T. Ogawa, Y. Yasuda, H. Mimura, T. Fujimoto, T. Fukuyama, T. Wakimoto, T. Asakawa, Y. Hamashima, T. Kan,  
*Angew. Chem., Int. Ed.* **2012**, 51, 12850-12853.
- 45) “Total Synthesis of (-)-Lemonomycin”  
A. Yoshida, M. Akaiwa, T. Asakawa, Y. Hamashima, S. Yokoshima, T. Fukuyama, T. Kan  
*Chem. Eur. J.* **2012**, 18, 11192-11195.
- 44) “A Short-step Asymmetric Synthesis of Dehydrodiconifery Alcohol (DCA) via C-H Insertion Reaction”  
S. Matsumoto, T. Asakawa, Y. Hamashima, T. Kan  
*Synlett* **2012**, 1082-1084.
- 43) “Copper-Catalyzed Trifluoromethylation of Allylsilanes”  
R. Shimizu, H. Egami, Y. Hamashima, M. Sodeoka  
*Angew. Chem., Int. Ed.* **2012**, 51, 4577-4580.
- 42) “Catalytic Asymmetric Mono-fluorination of  $\alpha$ -Keto Ester: Synthesis of Optically Active  $\alpha$ -Hydroxy- $\beta$ -fluoro Esters and  $\alpha$ -Amino- $\beta$ -fluoro Esters”  
S. Suzuki, Y. Kitamura, S. Lectard, Y. Hamashima, M. Sodeoka  
*Angew. Chem., Int. Ed.* **2012**, 51, 4581-4585.

- 41) "Synthesis and Biological Activities of Chaetocin and its Derivatives"  
M. Sodeoka, K. Dodo, Y. Teng, K. Iuchi, Y. Hamashima, E. Iwasa, S. Fujishiro  
*Pure Appl. Chem.* **2012**, *84*, 1369-1378.
- 40) "Catch & release of alkyne-tagged molecules in water by polymer-supported cobalt complex"  
H. Egami, S. Kamisuki, K. Dodo, M. Asanuma, Y. Hamashima, M. Sodeoka  
*Org. Biomol. Chem.* **2011**, *9*, 7667-7670.
- 39) "Total syntheses of chaetocin and *ent*-chaetocin"  
E. Iwasa, S. Fujishiro, Y. Hamashima, M. Sodeoka  
*Tetrahedron* **2011**, *67*, 6587-6599.
- 38) "Catalytic Asymmetric  $\alpha$ -Chlorination of 3-Acyl-oxazolidin-2-one with a Ternary Catalytic System"  
Y. Hamashima, T. Nagi, R. Shimizu, T. Tsuchimoto, M. Sodeoka  
*Eur. J. Org. Chem.* **2011**, 20-21, 3675-3678.
- 37) "Scope and Mechanism of Tandem Aza-Michael Reaction/Enantioselective Protonation Using a Pd- $\mu$ -Hydroxo Complex under Mild Conditions Buffered with Amine Salts"  
Y. Hamashima, S. Suzuki, T. Tamura, H. Somei, M. Sodeoka  
*Chem. Asian J.* **2011**, *6*, 658-668.
- 36) "Direct C2-trifluoromethylation of indole derivatives catalyzed by copper acetate"  
R. Shimizu, H. Egami, T. Nagi, J. Chae, Y. Hamashima, M. Sodeoka  
*Tetrahedron Lett.* **2010**, *51*, 5947-5949.
- 35) "Unnatural enantiomer of chaetocin shows strong apoptosis-inducing activity through caspase-8/caspase-3 activation"  
Y. Teng, K. Iuchi, E. Iwasa, S. Fujishiro, K. Dodo, Y. Hamashima, M. Sodeoka  
*Bioorg. Med. Chem. Lett.* **2010**, *20*, 5085-5088.
- 34) "Diastereo- and Enantioselective Conjugate Addition of  $\alpha$ -Ketoesters to Nitroalkenes Catalyzed by Chiral Ni(OAc)<sub>2</sub> Complex under Mild Conditions"  
A. Nakamura, S. Lectard, D. Hashizume, Y. Hamashima, M. Sodeoka  
*J. Am. Chem. Soc.* **2010**, *132*, 4036-4037.
- 33) "Total Synthesis of (+)-Chaetocin and its Analogs: Their Histone Methyltransferase G9a Inhibitory Activity"  
E. Iwasa, Y. Hamashima, S. Fujishiro, E. Higuchi, A. Ito, M. Yoshida, M. Sodeoka  
*J. Am. Chem. Soc.* **2010**, *132*, 4078-4079.
- 32) "Asymmetric conjugate addition of  $\alpha$ -keto esters to nitroolefins catalyzed by chiral Cu<sup>II</sup> hydroxo complexes"  
A. Nakamura, S. Lectard, R. Shimizu, Y. Hamashima, M. Sodeoka  
*Tetrahedron: Asymmetry* **2010**, *21*, 1682-1687.
- 31) "Enantioselective Protonation in the Aza-Michael Reaction Using a Combination of Chiral Pd- $\mu$ -Hydroxo Complex with an Amine Salt"  
Y. Hamashima, T. Tamura, S. Suzuki, M. Sodeoka

- Synlett* **2009**, 1631-1634.
- 30) "Mechanistic Studies on the Catalytic Asymmetric Mannich-Type Reaction with Dihydroisoquinolines and Development of Oxidative Mannich-type Reactions Starting from Tetrahydroisoquinolines"  
C. Dubs, Y. Hamashima, N. Sasamoto, T. M. Seidel, S. Suzuki, D. Hashizume, M. Sodeoka  
*J. Org. Chem.* **2008**, 73, 5859-5871.
- 29) "Pd<sup>II</sup>-catalyzed Asymmetric Addition Reactions of 1,3-Dicarbonyl Compounds: Mannich-type Reactions with *N*-Boc Imines and Three-component Aminomethylation"  
Y. Hamashima, N. Sasamoto, N. Umabayashi, M. Sodeoka  
*Chem. Asian J.* **2008**, 3, 1143-1155.
- 28) "Catalytic Enantioselective Aldol-type Reaction of  $\beta$ -Ketoesters with Acetals"  
N. Umabayashi, Y. Hamashima, D. Hashizume, M. Sodeoka  
*Angew. Chem., Int. Ed.* **2008**, 47, 4196-4199.
- 27) "Catalytic asymmetric conjugate reduction with ethanol: A more reactive system Pd(II)-<sup>*i*</sup>Pr-DUPHOS complex with molecular sieves 4A"  
D. Monguchi, C. Beemelmans, D. Hashizume, Y. Hamashima, M. Sodeoka  
*J. Organomet. Chem.* **2008**, 693, 867-873.
- 26) "Synthesis of optically active heterocyclic compounds using Pd-catalyzed asymmetric reactions as a key step"  
M. Sodeoka, Y. Hamashima  
*Pure Appl. Chem.* **2008**, 80, 763-776.
- 25) "Asymmetric Fluorination of  $\alpha$ -Aryl Acetic Acid Derivatives with the Catalytic System NiCl<sub>2</sub>-Binap/R<sub>3</sub>SiOTf /2,6-Lutidine"  
T. Suzuki, Y. Hamashima, M. Sodeoka  
*Angew. Chem., Int. Ed.* **2007**, 46, 5435-5439.
- 24) "Pd(II)-Catalyzed Asymmetric Fluorination of  $\alpha$ -Aryl- $\alpha$ -cyanophosphonates with the Aid of 2,6-Lutidine"  
K. Moriya, Y. Hamashima, M. Sodeoka  
*Synlett* **2007**, 1139-1142.
- 23) "Enantioselective Fluorination of *tert*-Butoxycarbonyl Lactones and Lactams Catalyzed by Chiral Pd(II)-Bisphosphine Complexes"  
T. Suzuki, T. Goto, Y. Hamashima, M. Sodeoka  
*J. Org. Chem.* **2007**, 72, 246-250.
- 22) "Catalytic Asymmetric Aldol Reactions of Enolizable Carbon Pronucleophiles with Formaldehyde and Ethyl Glyoxylate"  
I. Fukuchi, Y. Hamashima, M. Sodeoka  
*Adv. Synth. Catal.* **2007**, 349, 509-512.
- 21) "A New Entry to Pd-H Chemistry: Catalytic Asymmetric Conjugate Reduction of Enones with EtOH

- and a Highly Enantioselective Synthesis of Warfarin”  
Y. Tsuchiya, Y. Hamashima, M. Sodeoka  
*Org. Lett.* **2006**, *8*, 4851-4854.
- 20) “Pd(II)-Catalyzed Asymmetric Addition of Malonates to Dihydroisoquinolines”  
N. Sasamoto, C. Dubs, Y. Hamashima, M. Sodeoka  
*J. Am. Chem. Soc.* **2006**, *128*, 14010-14011.
- 19) “Highly enantioselective fluorination reactions of  $\beta$ -ketoesters and  $\beta$ -ketophosphonates catalyzed by chiral palladium complexes”  
Y. Hamashima, T. Suzuki, H. Takano, Y. Shimura, Y. Tsuchiya, K. Moriya, T. Goto, M. Sodeoka  
*Tetrahedron* **2006**, *62*, 7168-7179.
- 18) “Acid-base catalysis using chiral palladium complexes”  
M. Sodeoka, Y. Hamashima,  
*Pure Appl. Chem.* **2006**, *78*, 477-494.
- 17) “Catalytic Enantioselective Michael Reaction of 1,3-Dicarbonyl Compounds *via* Formation of Chiral Palladium Enolate”  
Y. Hamashima, D. Hotta, N. Umebayashi, Y. Tsuchiya, T. Suzuki, M. Sodeoka  
*Adv. Synth. Catal.* **2005**, *347*, 1576-1586.
- 16) “Catalytic Enantioselective Fluorination of Oxindoles”  
Y. Hamashima, T. Suzuki, H. Takano, Y. Shimura, M. Sodeoka  
*J. Am. Chem. Soc.* **2005**, *127*, 10164-10165.
- 15) “An efficient catalytic enantioselective fluorination of  $\beta$ -ketophosphonates using chiral palladium complexes”  
Y. Hamashima, T. Suzuki, Y. Shimura, T. Shimizu, N. Umebayashi, T. Tamura, N. Sasamoto, M. Sodeoka  
*Tetrahedron Lett.* **2005**, *46*, 1447-1450.
- 14) “Catalytic Asymmetric Addition of  $\beta$ -Ketoesters to Various Imines by Using Chiral Palladium Complexes”  
Y. Hamashima, N. Sasamoto, D. Hotta, H. Somei, N. Umebayashi, M. Sodeoka  
*Angew. Chem., Int. Ed.* **2005**, *44*, 1525-1529.
- 13) “Development of Catalytic Enantioselective Reactions *via* Palladium Enolates as Key Intermediates”  
M. Sodeoka, Y. Hamashima  
*Bull. Chem. Soc. Jpn.* **2005**, *78*, 941-956.
- 12) “Amine-Salt-Controlled, Catalytic Asymmetric Conjugate Addition of Various Amines and Asymmetric Protonation”  
Y. Hamashima, H. Somei, Y. Shimura, T. Tamura, M. Sodeoka  
*Org. Lett.* **2004**, *6*, 1861-1864.
- 11) “Immobilization and Reuse of Pd Complexes in Ionic Liquid: Efficient Catalytic Asymmetric Fluorination and Michael Reactions with  $\beta$ -Ketoesters”

- Y. Hamashima, H. Takano, D. Hotta, M. Sodeoka  
*Org. Lett.* **2003**, *5*, 3225-3228.
- 10) “An Efficient Enantioselective Fluorination of Various  $\beta$ -Ketoesters Catalyzed by Chiral Palladium Complexes”  
Y. Hamashima, K. Yagi, H. Takano, L. Tamás, M. Sodeoka  
*J. Am. Chem. Soc.* **2002**, *124*, 14530-14531.
- 9) “Direct Generation of Nucleophilic Chiral Palladium Enolate from 1,3-Dicarbonyl Compounds: Catalytic Enantioselective Michael Reaction with Enones”  
Y. Hamashima, D. Hotta, M. Sodeoka  
*J. Am. Chem. Soc.* **2002**, *124*, 11240-11241.
- 8) “Switching Enantiofacial Selectivities Using One Chiral Source: Catalytic Enantioselective Synthesis of the Key Intermediate for (2*S*)-Camptothecin Family by (*S*)-Selective Cyanosilylation of Ketones”  
K. Yabu, S. Masumoto, S. Yamasaki, Y. Hamashima, M. Kanai, W. Du, D. P. Curran, M. Shibasaki  
*J. Am. Chem. Soc.* **2001**, *123*, 9908-9909.
- 7) “Highly enantioselective cyanosilylation of aldehydes catalyzed by a Lewis acid-Lewis base bifunctional catalyst”  
Y. Hamashima, D. Sawada, H. Nogami, M. Kanai, M. Shibasaki  
*Tetrahedron* **2001**, *57*, 805-814.
- 6) “Catalytic enantioselective cyanosilylation of ketones: improvement of enantioselectivity and catalyst turn-over by ligand tuning”  
Y. Hamashima, M. Kanai, M. Shibasaki  
*Tetrahedron Lett.* **2001**, *42*, 691-694.
- 5) “Catalytic Enantioselective Cyanosilylation of Ketones”  
Y. Hamashima, M. Kanai, M. Shibasaki,  
*J. Am. Chem. Soc.* **2000**, *122*, 7412-7413.
- 4) “Design of a new bifunctional asymmetric catalyst from carbohydrates: application to catalytic asymmetric cyanosilylation of aldehydes and acetophenone”  
M. Kanai, Y. Hamashima, M. Shibasaki  
*Tetrahedron Lett.* **2000**, *41*, 2405-2409.
- 3) “A Catalytic Asymmetric Strecker-Type Reaction Promoted by Lewis Acid-Lewis Base Bifunctional Catalyst”  
M. Takamura, Y. Hamashima, H. Usuda, M. Kanai, M. Shibasaki  
*Chem. Pharm. Bull.* **2000**, *48*, 1586-1592.
- 2) “A Catalytic Asymmetric Strecker-Type Reaction: Interesting Reactivity Difference between TMSCN and HCN”  
M. Takamura, Y. Hamashima, H. Usuda, M. Kanai, M. Shibasaki  
*Angew. Chem., Int. Ed.* **2000**, *39*, 1650-1652.
- 1) “A New Bifunctional Asymmetric Catalysis: An Efficient Catalytic Asymmetric Cyanosilylation of



Aldehydes”

Y. Hamashima, D. Sawada, M. Kanai, M. Shibasaki  
*J. Am. Chem. Soc.* **1999**, *121*, 2641-2642.

**b) Reviews**

- 9) “Chemical synthesis of tea polyphenols and related compounds”  
T. Asakawa, Y. Hamashima, T. Kan  
*Curr. Pharm. Des.*, **2013**, *19*, 6207-6217.
- 8) “Epipolythiodiketopiperazine Alkaloids: Total Syntheses and Biological Activities”  
E. Iwasa, Y. Hamashima, M. Sodeoka  
*Israel J. Chem.* **2011**, *51*, 420-433.
- 7) “Recent Advances in Catalytic Enantioselective Fluorination Reactions”  
S. Lectard, Y. Hamashima, M. Sodeoka  
*Adv. Synth. & Catal.* **2010**, *352*, 2708-2732.
- 6) “Development of Novel Catalytic Asymmetric Reactions Using Cationic Group-10 Metal Complexes: With a Special Focus on Reactions in which Palladium Enolates Plays a Key Role”  
Y. Hamashima, M. Sodeoka  
*TCI MAIL*, **2010**, *140*, 2-16.
- 5) “Chiral Pd aqua complex-catalyzed asymmetric C-C bond-forming reactions: a Brønsted acid-base cooperative system”  
M. Sodeoka, Y. Hamashima  
*Chem. Commun.* **2009**, 5787-5798.
- 4) “Catalytic Enantioselective  $\alpha$ -Fluorination of Carbonyl Compounds Using Chiral Transition Metal Complexes”  
Y. Hamashima, M. Sodeoka  
*J. Synth. Org. Chem., Jpn.* **2007**, *65*, 1099-1107.
- 3) “Acid-Base Catalysis of Chiral Palladium Complexes: Development of Novel Asymmetric Reactions and Their Application to Synthesis of Drug Candidates”  
Y. Hamashima  
*Chem. Pharm. Bull.* **2006**, *54*, 1351-1364.
- 2) “Enantioselective Fluorination Reactions Catalyzed by Chiral Palladium Complexes”  
Y. Hamashima, M. Sodeoka  
*Synlett* **2006**, 1467-1478.
- 1) “Development of Catalytic Asymmetric Reactions via Chiral Palladium Enolates”  
Y. Hamashima, M. Sodeoka  
*Chem. Rec.* **2004**, *4*, 231-242.

**Invited Lectures (international conferences):**

- 6) “Asymmetric halofunctionalization of olefins with novel bifunctional organocatalysts”  
Y. Hamashima  
The International Chemical Congress of Pacific Basin Societies 2015 (Hawaii) 2015. 12. 17.
- 5) “Continuous flow synthesis using a new type of microwave applicator”  
Y. Hamashima  
The United Kingdom Automated Synthesis Forum (Nottingham, UK) 2015. 11. 12.
- 4) “Asymmetric bromolactonization and its application to natural product synthesis”  
Y. Hamashima  
Japan-USA Organocatalytic Symposium (Hawaii) 2012. 12. 15-18.
- 3) “Acid-base Catalysis with Transition Metal Complexes in Asymmetric C-C Bond-forming Reactions”  
Y. Hamashima  
BIT’s 1st Annual World Congress of Catalytic Asymmetric Synthesis 2010 (Beijing) 2010. 5. 19-21.
- 2) “Acid-base Catalysis with Transition Metal Complexes in Asymmetric C-C Bond-forming Reactions”  
Y. Hamashima  
5<sup>th</sup> Spanish-Portuguese-Japanese Organic Chemistry Symposium (Osaka University) 2009. 11. 6-8.
- 1) “Enantioselective Catalysis Based on Transition Metal Enolate Chemistry”  
Y. Hamashima  
Gordon Research Conference-Stereochemistry (Newport, RI, USA) 2008. 7. 30.

**Patents:**

- 1) Method for purification of proteins using cobalt-carbonyl complexes immobilized on solid phases, and ligand-cobalt-carbonyl complex conjugates and kits therefor.  
M. Sodeoka, K. Dodo, Y. Hamashima, H. Egami,  
Jpn. Kokai Tokkyo Koho (2011), JP 2011241155 A 20111201.
- 2) Chemical synthesis method of functional polyphenol derivatives  
T. Kan, Y. Hamashima, T. Asakawa, D. Kawamura,  
Jpn. Kokai Tokkyo Koho (2013), JP 2013151488 A 20130808.
- 3) Process for producing optically active  $\beta$ -amino acid.  
M. Sodeoka, Y. Hamashima, Jpn. Kokai Tokkyo Koho (2010) JP 4446465.
- 4) Process for producing optically active  $\beta$ -amino acid.  
M. Sodeoka, Y. Hamashima, PTC Int. Appl. (2005) WO 2005-016866.
- 5) Method for preparation of optically active fluoro ketone compounds.  
M. Sodeoka, Y. Hamashima, Jpn. Kokai Tokkyo Koho (2004) JP 2004-010555.
- 6) Synthesis of chiral ligands as asymmetric catalysts in addition reaction to ketones.  
M. Shibasaki, M. Kanai, Y. Hamashima, PTC Int. Appl. (2002) WO 2002000668.
- 7) Method for preparation of chiral cyano silyl compounds using asymmetric synthesis catalyst

composition

M. Shibasaki, H. Nogami, Y. Hamashima, M. Kanai, Jpn. Kokai Tokkyo Koho (2001) JP 2001-348392.

- 8) Preparation of optically active 3,3'-bis(phosphinoylalkyl)-1,1'-bi-2-naphthols or their metal coordination complexes and method for preparation of optically active cyanohydrin compounds using the same as catalysts

M. Shibasaki, M. Kanai, Y. Hamashima, Jpn. Kokai Tokkyo Koho (2000) JP 2000-191677.

**Books:**

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