A. Publications

1) "Facile synthesis of trifluoromethyl-substituted enynes: Remarkable reactivity and stereoselectivity of tributyl(3,3,3-trifluoropropynyl)stannane in carbostannylation of alkynes"
S. Shimizu,* G. Jiang, M. Murai, Y. Takeda, Y. Nakao, T. Hiyama, E. Shirakawa, ***Chemistry Letters***, 34, 1700–1701 (2005).

2) "Copper-catalyzed transformation of carbonyl-ene-nitrile compounds: Vinylation, imino ene reaction, and alkynylation of 2-aza-2,4-cyclopentadienone intermediates generated *via* Ritter-type hydration and dehydrative cyclization reactions"
M. Murai, S. Kawai, K. Miki, K. Ohe,* ***Journal of Organometallic Chemistry***, 692, 579–584 (2007).

3) "Novel generation of 3,3,3-trifluoropropynyllithium and transformation of the carbonyl adducts to trifluoromethyl-substituted allenes"
M. Shimizu,* M. Higashi, Y. Takeda, G. Jiang, M. Murai, T. Hiyama, ***Synlett***, 1163–1165 (2007).

4) "Transition metal-catalyzed ring-opening, substitution, and cyclopropanation reactions *via* vinylcarbene complexes generated from *O*-propargyl thiocarbamates"
Y. Ikeda, M. Murai, T. Abo, K. Miki, K. Ohe,* ***Tetrahedron Letters***, 48, 6651–6654 (2007).

5) "Copper-catalyzed addition reactions of aromatics and ketones to 2-aza-2,4-cyclopentadienone: Facile and efficient transformation of carbonyl-ene-nitriles to 1*H*-pyrrolin-2(5*H*)-ones"
M. Murai, K. Miki, K. Ohe,* ***The Journal of Organic Chemistry***, 73, 9174–9176 (2008).

6) "A new route to 3-acyl-2-aminobenzofurans: Palladium-catalyzed cycloisomerisation of 2-(cyanomethyl)-phenyl esters"
M. Murai, K. Miki, K. Ohe,* ***Chemical Communications***, 45, 3466–3468, (2009).

7) "New preparation and synthetic reactions of 3,3,3-trifluoropropynyllithium, -borate and -stannane: Facile synthesis of trifluoromethylated allenes, arylacetylenes and enynes"
M. Shimizu,* M. Higashi, Y. Takeda, M. Murai, G. Jiang, Y. Asai, Y. Nakao, E. Shirakawa, T. Hiyama, ***Future Medicinal Chemistry***, 1, 921–945 (2009).

8) "Atom-efficient synthesis of α-alkylidene-*N*-furylimines *via* catalytic vinylcarbene-transfer reactions to carbonyl-ene-nitrile compounds"
M. Murai, S. Yoshida, K. Miki, K. Ohe,* ***Chemical Communications***, 46, 3366–3368 (2010).

9) "A stereoselective cyclization cascade mediated by SmI_2-H_2O: Synthetic studies towards Stolonidiol"
T. M. Baker, L. A. Sloan, L. H. Choudhury, M. Murai, D. J. Procter,* ***Tetrahedron: Asymmetry***, 21, 1246–1261 (2010).

10) "Gallium(III)-catalyzed bromocyanation of alkynes: Regio- and stereoselective synthesis of β-bromo-α,β-unsaturated nitriles"
M. Murai, R. Hatano, S. Kitabata, K. Ohe,* ***Chemical Communications***, 47, 2375–2377 (2011).

11) "Rhodium-catalyzed carbene transfer reactions *via* thienylcarbene complexes generated from thiocarbamoyl-ene-yne compounds"
A. Tsuneishi, K. Okamoto, Y. Ikeda, M. Murai, K. Miki, K. Ohe,* ***Synlett***, 655–658 (2011).

12) "Practical synthesis of aromatic nitriles *via* gallium-catalyzed electrophilic cyanation of aromatic C–H bond"
K. Okamoto, M. Watanabe, M. Murai, R. Hatano, K. Ohe,* ***Chemical Communications***, 48, 3127–3129 (2012).

13) "Pd- and Cu-catalyzed one-pot multicomponent synthesis of hetero α,α'-dimers of heterocycles"
T. Murata, M. Murai, Y. Ikeda, K. Miki, K. Ohe,* ***Organic Letters***, 14, 2296–2299 (2012).

14) "Azulene-based conjugated polymers: Unique seven-membered ring connectivity leading to

stimuli-responsiveness"
M. Murai, E. Amir, R. J. Amir, C. J. Hawker,* ***Chemical Science***, 3, 2721–2725 (2012).

15) "Gold-catalyzed cycloisomerization reactions of 2-(2-propynyl)pyridine *N*-oxides leading to indolizinones"
M. Murai, S. Kitabata, K. Okamoto, K. Ohe,* ***Chemical Communications***, 48, 7622–7624 (2012).

16) "Photoinitated click reactions for the creation of spatially defined materials"
D. Miyajima, M. Murai, C. J. Hawker, ***Koubunshi***, 61, 862–864 (2012).

17) "Zinc-porphyrins functionalized with redox-active peripherals: Enhancement of dπ-pπ interaction leading to unique assembly and redox-triggered remote switching of fluorescence"
M. Murai, M. Sugimoto, M. Akita,* ***Dalton Transactions***, 42, 16108–16120 (2013).

18) "Copper-catalyzed C–H cyanation of terminal alkynes with cyanogen iodide"
K. Okamoto,* M. Watanabe, N. Sakata, M. Murai, K. Ohe,* ***Organic Letters***, 15, 5810–5813 (2013).

19) "Bismuth(III)-catalyzed dehydrative etherification and thioetherification of phenolic hydroxy groups"
M. Murai,* K. Origuchi, K. Takai,* ***Organic Letters***, 16, 3828–3831 (2014).

20) "Modulating structure and properties in organic chromophores: Influence of azulene as a building block"
M. Murai, S.-Y. Ku, N. D. Treat, M. J. Robb, M. L. Chabinyc, C. J. Hawker,* ***Chemical Science***, 5, 3753–3760 (2014).

21) "Bismuth-catalyzed synthesis of PAHs with a phenanthrene backbone *via* cyclization and aromatization of 2-(2-arylphenyl)vinyl ethers"
M. Murai,* N. Hosokawa, D. Roy, K. Takai,* ***Organic Letters***, 16, 4134–4137 (2014).

22) "Conjugated oligomers incorporating azulene building blocks –Seven- *vs* five-membered ring connectivity"
E. Amir, M. Murai, R. J. Amir, R. J. S. Cowart Jr, M. L. Chabinyc, C. J. Hawker,* ***Chemical Science***, 5, 4483–4489 (2014).

23) "Modulating the properties of azulene-containing polymers through controlled incorporation of regioisomers"
K. Tsurui, M. Murai, S.-Y. Ku, C. J. Hawker,* M. J. Robb,* ***Advanced Functional Materials***, 24, 7338–7347 (2014).

24) "Rhenium-catalyzed synthesis of 2*H*-1,2-oxaphosphorin 2-oxides *via* the regio- and stereoselective addition reaction of β-keto phosphonates with alkynes"
M. Murai,* M. Nakamura, K. Takai,* ***Organic Letters***, 16, 5784–5787 (2014).

25) "Rhodium-catalyzed dehydrogenative germylation of C–H bonds: New entry to unsymmetrically functionalized 9-germafluorenes"
M. Murai,* K. Matsumoto, R. Okada, K. Takai,* ***Organic Letters***, 16, 6492–6495 (2014).

26) "Iridium-catalyzed intermolecular dehydrogenative silylation of polycyclic aromatic compounds without directing group"
M. Murai,* K. Takami, K. Takai,* ***Chemistry –A European Journal***, 21, 4566–4570 (2015).

27) "Isolation and structural characterization of *gem*-di(iodozincio)methane complexes stabilized with nitrogen ligands"
Y. Nishida, N. Hosokawa, M. Murai,* K. Takai,* ***Journal of the American Chemical Society***, 137, 114–117 (2015).

28) "Rhenium-catalyzed *anti*-Markovnikov addition reaction of methanetricarboxylates to unactivated terminal acetylenes"
S. Hori, M. Murai,* K. Takai,* ***Journal of the American Chemical Society***, 137, 1452–1457 (2015).

29) "Transition metal-catalyzed facile access to 3,11-dialkylfulminenes for transistor application"
M. Murai,* H. Maekawa, S. Hamao, Y. Kubozono, D. Roy, K. Takai,* ***Organic Letters***, 17, 708–711 (2015).

30) "Rhenium-catalysed dehydrogenative borylation of primary and secondary C(sp^3)–H bonds adjacent to a nitrogen atom"
M. Murai,* T. Omura, Y. Kubozono, K. Takai,* ***Chemical Communications***, 51, 4583–4586 (2015).

31) "Palladium-catalyzed three-component coupling reactions of 2-(cyanomethyl)phenol, aryl halides, and carbon monooxide"
M. Murai, K. Okamoto, K. Miki, K. Ohe,* ***Tetrahedron***, 71, 4432–4437 (2015).

32) "Iridium-catalyzed dehydrogenative silylation of azulenes based on the regioselective C–H bonds activation"
M. Murai,* K. Takami, H. Takeshima, K. Takai,* ***Organic Letters***, 17, 1798–1801 (2015).

33) "Acceleration effects of phosphine ligands on the rhodium-catalyzed dehydrogenative silylation and germylation of unactivated C(sp^3)–H bonds"
M. Murai,* H. Takeshima, H. Morita, Y. Kuninobu, K. Takai,* ***The Journal of Organic Chemistry***, 80, 5407–5414 (2015). Selected as a *Featured Article* and *ACS Editor's Choice.*

34) "Rhodium-catalyzed synthesis of benzosilolometallocenes *via* the dehydrogenative silylation of C(sp^2)–H bonds"
M. Murai,* K. Matsumoto, K. Takeuchi, K. Takai,* ***Organic Letters***, 17, 3102–3105 (2015).

35) "Stereospecific deoxygenation of aliphatic epoxides to alkenes under rhenium catalysis"
T. Nakagiri, M. Murai,* K. Takai,* ***Organic Letters***, 17, 3346–3349 (2015).
Highlight in "*Organic Chemistry Highlights*".

36) "Short synthesis of [5]- and [7]phenacenes with silyl groups at the axis positions"
D. Roy, H. Maekawa, M. Murai,* K. Takai,* ***Chemistry –An Asian Journal***, 10, 2518–2524 (2015).

37) "Rhodium-catalyzed synthesis of chiral spiro-9-silabifluorenes *via* dehydrogenative silylation: Mechanistic insights into the construction of tetraorganosilicon stereocenters"
M. Murai,* Y. Takeuchi, K. Yamauchi, Y. Kuninobu, K. Takai,* ***Chemistry –A European Journal***, 22, 6048–6058 (2016). Selected as a *Hot Paper*.

38) "Palladium-catalyzed direct arylation of azulene based on the regioselective C–H bond activation"
M. Murai,* M. Yanagawa, M. Nakamura, K. Takai,* ***Asian Journal of Organic Chemistry***, 629–635 (2016).

39) "Synthesis of sila[*n*]helicenes *via* dehydrogenative silylation of C–H bonds under rhodium catalysis"
M. Murai,* R. Okada, A. Nishiyama, K. Takai,* ***Organic Letters***, 18, 4380–4383 (2016).

40) "Molybdenum-catalyzed stereospecific deoxygenation of epoxides to alkenes"
S. Asako,* T. Sakae, M. Murai, K. Takai,* ***Advanced Synthesis and Catalysis***, 358, 3966–3970 (2016). Selected as a *Very Important Paper*.

41) "Rhenium-catalyzed 1,1-difunctionalization of 1,*n*-diynes with carbon nucleophiles followed by sequential cyclization leading to tetrahydroindenone derivatives"
M. Murai,* E. Uemura, S. Hori, K. Takai,* ***Angewandte Chemie International Edition***, 56, 5862–5866 (2017).

42) "Iridium-catalyzed dehydrogenative dimerization of benzylmethylsilanes *via* silylation of C(sp^3)–H bonds adjacent to a silicon atom"
M. Murai,* Y. Takeuchi, K. Takai,* ***Chemistry Letters***, 46, 1044–1047 (2017).

43) "Rhodium-catalyzed silylative and germylative cyclization with dehydrogenation leading to 9-sila- and 9-germafluorenes: A combined experimental and computational mechanistic study"
M. Murai,* R. Okada, S. Asako, K. Takai,* ***Chemistry –A European Journal***, 23, 10861–10870 (2017).
Selected as a *Hot Paper*.

44) "Iridium-catalyzed hydrosilylation of cyclopropanes *via* regioselective carbon–carbon bond cleavage"
M. Murai,* A. Nishiyama, N. Nishinaka, H. Morita, K. Takai,* ***Chemical Communications***, 53, 9281–9284 (2017).

45) "Structural characterization and unique catalytic performance of reactive silyl-substituted geminal dichromiomethane complexes stabilized with diamine ligand"
M. Murai,* R. Taniguchi, N. Hosokawa, Y. Nishida, H. Mimachi, T. Oshiki, K. Takai,* ***Journal of the American Chemical Society***, 139, 13184–13192 (2017).
Selected as *JACS Spotlights* (*J. Am. Chem. Soc.*, 139, 12863–12864 (2017)).

46) "Azulene-fused linear-shaped polycyclic aromatic hydrocarbons with low bandgap and unique stimuli-responsiveness"
M. Murai,* S. Iba, H. Ota, K. Takai,* ***Organic Letters***, 19, 5585–5588 (2017).

47) "Rhenium-catalyzed *ortho*-alkylation of phenols"
Y. Kuninobu,* M. Yamamoto, M. Nishi, T. Yamamoto, T. Matsuki, M. Murai,* K. Takai,* ***Organic Syntheses***, 94, 280–291 (2017).

48) "Straightforward approach to borylcyclopropanes by chromium-promoted cyclopropanation of unactivated alkenes"
M. Murai,* C. Mizuta, R. Taniguchi, K. Takai,* ***Organic Letters***, 19, 6104–6107 (2017).

49) "Iridium-catalyzed sequential silylation and borylation of heteroarenes based on the regioselective C–H bond activation"
M. Murai,* N. Nishinaka, K. Takai,* ***Angewandte Chemie International Edition***, 57, 5843–5847 (2018).

50) "Amine-promoted *anti*-Markovnikov addition reaction of 1,3-dicarbonyl compounds with terminal alkynes under rhenium catalysis"
M. Murai,* E. Uemura, K. Takai,* ***ACS Catalysis***, 8, 5454–5459 (2018).

51) "Catalytic cleavage and reformation of ethereal σ-bonds"
M. Murai,* K. Origuchi, K. Takai,* ***Chemistry Letters***, 47, 927–930 (2018).

52) "Unsymmetrical difunctionalization of two different C–H bonds in one-pot under transition metal catalysis"
M. Murai,* K. Takai,* ***Synthesis*** (Mini review), 51, 40–54 (2019).
Invited contribution to the "*Golden Synthesis Anniversary Special Issue*" (P. Knochel, Ed.).

53) "Regioselective arene homologation through rhenium-catalyzed deoxygenative aromatization of 7-oxabicyclo[2.2.1]hepta-2,5-diene"
M. Murai,* T. Ogita, K. Takai,* ***Chemical Communications***, 55, 2332–2335 (2019).

54) "Palladium-catalyzed double-bond migration of unsaturated hydrocarbons controllable by second metal catalysts"
M. Murai,* K. Nishimura, K. Takai,* ***Chemical Communications***, 55, 2769–2772 (2019).

55) "Chromium-mediated stannylcyclopropanation of alkenes with (diiodomethyl)stannanes"
M. Murai,* R. Taniguchi, C. Mizuta, K. Takai,* ***Chemical Communications***, 21, 2668–2672 (2019).

56) "Regioselective functionalization of 9,9-dimethyl-9-silafluorenes by borylation, bromination, and nitration"
M. Murai,* N. Nishinaka, M. Kimura, K. Takai,* ***The Journal of Organic Chemistry***, 84, 5667–5676 (2019).

57) "Rhenium-catalyzed regioselective *ortho*-alkenylation and [3+2+1]cycloaddition of phenols with internal alkynes"
M. Murai,* M. Yamamoto, K. Takai,* ***Organic Letters***, 21, 3441–3445 (2019).

58) "Rhenium-catalysed cyclization *via* 1,2-iodine and 1,5-hydrogen migration for the synthesis of 2-iodo-1*H*-indenes"
M. Murai,* K. Takai,* ***Organic Letters***, 21, 6756–6760 (2019).

59) "Mechanistic insights into rhenium-catalyzed regioselective *C*-alkenylation of phenols with internal alkynes"
M. Murai,* M. Yamamoto, K. Takai,* ***Chemistry –A European Journal***, 25, 15189–15197 (2019).

60) "Regioselective sequential silylation and borylation of aromatic aldimines as a strategy for programming synthesis of multifunctionalized benzene derivatives"
M. Murai,* N. Nishinaka, T. Enoki, K. Takai,* ***Organic Letters***, 22, 316–321 (2020).

60) "Cyclization of 1,*n*-enynes initiated by the addition reaction of *gem*-dichromiomethane reagents to alkynes"
M. Murai,* R. Taniguchi, K. Takai,* ***Organic Letters***, 22, 3985–3988 (2020).

61) "Cyclization of 5-alkynylketones with chromium alkylidene equivalents generated *in situ* from *gem*-dichromiomethanes"
M. Murai,* R. Taniguchi, T. Kurogi, S. Moritani, K. Takai,* ***Chemical Communications***, 56, 9711–9714 (2020).

62) "Control of regioselectivity of carbene/alkyne metathesis in chromium-mediated coupling and cyclization with 1,6-enynes"
M. Murai,* R. Taniguchi, K. Takai,* ***Bulletin of the Chemical Society of Japan***, *94*, 2848–2852 (2021).

63) "Silylative cyclization with dehydrogenation leading to benzosilole-fused azulenes showing unique stimuli-responsive fluorescence"
M. Murai,* ***Asian Journal of Organic Chemistry***, *11*, 262–266 (2022).

64) "Diazulenylmethyl cations with a silicon bridge: A π-extended cationic motif to form *J*-aggregates with near-infrared absorption and emission"
M. Murai,* M. Abe, S. Ogi, S. Yamaguchi,* ***Journal of the American Chemical Society***, *144*, 20385–20393 (2022).
Press released by Nagoya Univ.

65) "Germanium- and tin-bridged diazulenylmethyl cations: Effects of the group 14 element on the structure and properties of the π-extended cation"
M. Murai,* M. Ito, S. Takahashi, S. Yamaguchi,* ***Dalton Transactions***, *52*, *in press* (2023).

66) "A kinetically stabilized nitrogen-doped triangulene cation: Stable and NIR fluorescent diradical cation with triplet ground state"
S. Arikawa, A. Shimizu,* D. Shiomi, K. Sato,* T. Takui, H. Sotome,* H. Miyasaka, M. Murai, S. Yamaguchi, S. Shintani,* ***Angewandte Chemie International Edition***, *62*, *in press* (2023).

67) "Azulene-fused linearly π-extended polycyclic aromatic hydrocarbons: Synthesis, photophysical properties, and OFETs applications"
M. Murai,* S. Iba, S. Hamao, Y. Kubozono, H. Ota, K. Takai,* ***Bulletin of the Chemical Society of Japan***, *96*, 1077 (2023).
Highlighted as a "*Selected Paper*".

68) "Dithienoazepine-based near-infrared dyes: Janus-faced effects of thiophene-fused structure on antiaromatic azepines"
M. Murai,* T. Enoki, S. Yamaguchi,* ***Angewandte Chemie International Edition***, *62*, e202311445 (2023).
Selected as a *Very Important Paper* and *Inside Cover*

Press released by Nagoya Univ.

B. Oral Presentation in the International Conference

1) "Development of azulene-based novel π-conjugated molecules: Enhancement of dipolar leading to unique stimuli-responsiveness"
M. Murai, C. J. Hawker, 12th International Kyoto Conference on New Aspects of Organic Chemistry (IKCOC 12)
Kyoto, November, 2012

2) "Rhenium-catalyzed *anti*-Markovnikov addition reaction of carbon nucleophiles to unactivated terminal acetylenes"
M. Murai, International Symposium on Pure & Applied Chemistry (ISPAC)
Ho Chi Minh, Vietnam, June, 2017 (Invited)

3) "Transition metal-catalyzed intermolecular dehydrogenative silylation of aromatic compounds without directing groups based on the regio- and chemoselective C–H bond activation"
M. Murai, 8th Annual Global Congress of Catalysis 2017
Shanghai, China, October, 2017 (Invited)

4) "Regioselective benzoannulation of PAHs *via* the rhenium-catalyzed deoxygenation of 7-oxabicyclo[2.2.1]-hepta-2,5-diene"
M. Murai, K. Takai, International Symposium on JST ACT-C Project ~Invention of π-Electronic Organic Molecules toward Electronic Energy Devices~
Okayama, July, 2017

5) "Rhenium-catalyzed *anti*-Markovnikov addition reaction of carbon nucleophiles to unactivated terminal acetylenes"
M. Murai, K. Takai, 14th International Kyoto Conference on New Aspects of Organic Chemistry (IKCOC 14)
Kyoto, November, 2018

6) "Rhenium-catalyzed intermolecular *anti*-Markovnikov addition reaction of 1,3-dicarbonyl compounds with terminal alkynes"
M. Murai, K. Takai, 28th International Conference on Organometallic Chemistry (ICOMC 2018)
Florence, Italy, July, 2018 (Invited)

7) "Regioselective benzannulation of PAHs *via* rhenium-catalyzed deoxygenation of 7-oxabicyclo[2.2.1]hepta-2,5-diene"
M. Murai, International Congress on Pure & Applied Chemistry (ICPAC)
Yangon, Myanmar, August, 2019 (Invited)

8) "Silicon-bridged diazulenylmethyl cations as a π-extended cationic motif to form *J*-aggregates with near-infrared emission"
M. Murai, S. Yamaguchi, 15th International Symposium on Functional-π Electron Systems (Fπ-15)
Raleigh, USA, June, 2023

9) "Alignment of azulene-based cationic π-skeletons toward functional π-materials"
M. Murai, 15th International Kyoto Conference on New Aspects of Organic Chemistry (IKCOC 15)
Kyoto, November, 2023

10) "Design and synthesis of key nonbenzenoid core units realizing near-infrared emission"
M. Murai, 2023 International IRCCS–IRTG–ILR Symposium on "New Horizons of Molecular Functions"
Nagoya, December, 2023