

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) Metal-Catalyzed Annulation Reactions for π -Conjugated Polycycles

Jin, T. ;* Zhao, J.; Asao, N.; Yamamoto, Y. *Chem. Eur. J.* **2014**, in press.
(10.1002/chem.201304640)

(2) Synergistic effect of nanoporous AuPd alloy catalysts on highly chemoselective 1,4-hydrosilylation of conjugated cyclic enones

Chen, Q.; Tanaka, S.; Fujita, T.; Chen, L.; Minato, T.; Ishikawa, Y.; Chen, M.; Asao, N.; Yamamoto, Y.; Jin, T.* *Chem. Commun.* **2014**, 50, 3344-3346. (10.1039/c3cc49524h)

(3) Cu-Catalyzed C-H Amination of Hydrofullerenes Leading to 1,4-Difunctionalized Fullerenes

Si, W.; Lu, S.; Bao, M.; Asao, N.; Yamamoto, Y.; Jin, T.* *Org. Lett.* **2014**, 14, 620-623.
(10.1021/ol403573r)

(4) Thieno[2,3-*a*]carbazole-based donor- π -acceptor organic dyes for efficient dye-sensitized solar cells

Zhao, J.; Jin, T. ;* Islam, A.; Kwon, E.; Akhtaruzzaman, M.; Asao, N.; Han, L.; Alamry, K. A.; Kosa, S. A.; Asiri, A. M.; Yamamoto, Y. *Tetrahedron* **2014**, in press.
(10.1016/j.tet.2014.01.001)

(5) Single Crystal Biphenyl End-Capped Furan-Incorporated Oligomers: Influence of Unusual Packing Structure on Carrier Mobility and Luminescence

Oniwa, K.; Kanagasekaran, T.; Jin, T. ;* Akhtaruzzaman, M.; Yamamoto, Y.; Tamura, H.; Hamada, I.; Shimotani, H.; Asao, N.; Ikeda, S.; Tanigaki, K. *J. Mater. Chem. C* **2013**, 1, 4165-4170. (10.1039/c3tc30220b)

(6) Theoretical Analysis on the Optoelectronic Properties of Single Crystals of Thiophene-furan-phenylene Co-Oligomers: Efficient Photoluminescence due to Molecular Bending

Tamura, H.; Hamada, I.; Shang, H.; Oniwa, K.; Akhtaruzzaman, M.; Jin, T.; Asao, N.; Yamamoto, Y.; Kanagasekaran, T.; Shimotani, H.; Ikeda, S.; Tanigaki, K. *J. Phys. Chem. C* **2013**, 117, 8072-8078. (10.1021/jp400646n)

(7) Pd-Catalyzed Cascade Crossover-Annulation of *o*-Alkynylarylhalides and Diarylacetylenes Leading to Dibenzo[*a,e*]pentalenes

Zhao, J.; Oniwa, K.; Asao, N.; Yamamoto, Y.; Jin, T.* *J. Am. Chem. Soc.* **2013**, 135, 10222-10225. (10.1021/ja403382d)

- (8) Deuterium Isotope Effect on BHJ Solar Cells. Enhancement of Organic Photovoltaic Performances using Monobenzyl Substituted Deuteriofullerene Acceptors
Lu, S.; Jin, T.;* Yasuda, T.; Si, W.; Oniwa, K.; Alamry, K. A.; Kosa, A. A.; Asiri, A. M.; Han, L.; Yamamoto, Y. *Org. Lett.* **2013**, *15*, 5674-5677. (10.1021/ol4026606)
- (9) Co-Catalyzed Radical Cycloaddition of [60]Fullerene with Active Dibromides: Selective Synthesis of Carbocycle-Fused Fullerene Monoadducts
Lu, S.; Si, W.; Bao, M.; Yamamoto, Y.; Jin, T.* *Org. Lett.* **2013**, *15*, 4030-4033. (10.1021/ol401876n)
- (10) Remarkable Catalytic Property of Nanoporous Gold on Activation of Diborons for Direct Diboration of Alkynes
Chen, Q.; Zhao, J.; Ishikawa, Y.; Asao, N.; Yamamoto, Y.; Jin, T.* *Org. Lett.* **2013**, *15*, 5766-5769. (10.1021/ol4028013)
- (11) Unsupported Nanoporous Gold Catalyst for Highly Selective Hydrogenation of Quinolines
Yan, M.; Jin, T.;* Chen, Q.; Ho, H. E.; Fujita, T.; Chen, L.-Y.; Bao, M.; Chen, M.-Y.; Asao, N.; Yamamoto, Y. *Org. Lett.* **2013**, *15*, 1484-1487. (10.1021/ol400229z)
- (12) Functional 2-benzyl-1,2-dihydro[60]fullerenes as acceptors for organic photovoltaics: facile synthesis and high photovoltaic performances
Lu, S.; Jin, T.;* Yasuda, T.; Islam, A.; Akhtaruzzaman, M.; Han, L.; Alamry, K. A.; Kosa, S. A.; Asiri, A. M.; Yamamoto, Y.* *Tetrahedron* **2013**, *69*, 1302-1306. (10.1016/j.tet.2012.11.099)
- (13) Structure-property relationship of different electron donors: novel organic sensitizers based on fused dithienothiophene π -conjugated linker for high efficiency dye-sensitized solar cells
Akhtaruzzaman, M.; Menggenbateer; Islam, A.;* El-Shafeie, A.;* Asao, N.; Jin, T.; Han, L.; Alamry, K. A.; Kosa, S. A.; Asiri, A. M.; Yamamoto, Y.* *Tetrahedron* **2013**, *69*, 3444-3450. (10.1016/j.tet.2013.02.058)
- (14) Nanoporous Gold Catalyst for Highly Selective Semihydrogenation of Alkynes: Remarkable Effect of Amine Additives
Yan, M.; Jin, T.;* Ishikawa, Y.; Minato, T.; Fujita, T.; Chen, L.-Y.; Bao, M.; Asao, N.; Chen, M.-W.; Yamamoto, Y. *J. Am. Chem. Soc.* **2012**, *134*, 17536-17542. (10.1021/ja3087592)
- (15) From molecular catalysts to nanostructured materials skeleton catalysts
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- (17) NaOH-Catalyzed Dimerization of Monofunctionalized Hydrofullerenes: Transition-Metal-Free, General, and Efficient Synthesis of Single-Bonded [60]Fullerene Dimers
Lu, S.; Jin, T.;* Bao, M.; Yamamoto, Y. *Org. Lett.* **2012**, *14*, 3466-3469. (10.1021/ol301435m)
- (18) Synthesis of 2,3-Dihydro-1*H*-inden-1-one Derivatives via Ni-Catalyzed Intramolecular hydroacylation
Yang, F.; Jin, T.;* Yamamoto, Y. *Tetrahedron* **2012**, *68*, 5223-5228. (10.1016/j.tet.2012.03.053)
- (19) Cascade Cyclization of Arylidynes using Iodine: Synthesis of Iodo-substituted Benzo[*b*]naphtho[2,1-*d*]thiophene Derivatives for Dye-sensitized Solar Cells
Ferrara, G.; Jin, T.;* Akhtaruzzaman, M.; Islam, A.; Han, L.; Jiang, H.; Yamamoto, Y. *Tetrahedron Lett.* **2012**, *53*, 1946-1950. (10.1016/j.tetlet.2012.02.007)
- (20) Palladium-catalyzed Bisfunctionalization of Active Alkenes by β -Acetonitrile- α -allyl Addition: Application to the Synthesis of Unsymmetric 1,4-Di(organo)fullerene Derivatives
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- (21) Synthesis of New Donor-Acceptor-Donor Materials via Au-catalyzed Double Cascade Cyclization
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- (22) Highly Efficient Cu(OAc)₂-Catalyzed Dimerization of Mono-Functionalized Hydrofullerenes Leading to Single Bonded [60]Fullerene Dimers
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- (23) Click Chemistry of Alkyne-Azide Cycloaddition using Nanostructured Copper Catalysts
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ナノ多孔質金属材料を用いた触媒反応

浅尾直樹，金鉄男，触媒，2013，55 (4), 209-213.

2 . 学会発表等（国内外の招待講演および国際会議での発表状況）

- (1) Remarkable Deuterium Isotope Effect of Deuterofullerene Acceptors on Organic Photovoltaic Performances
Jin, T.; Lu, S.; Yasuda, T.; Si, W.; Oniwa, K.; Han, L.; Asao, N.; Yamamoto, Y. The AIMR International Symposium 2014 (AMIS 2014), Sendai, Japan, 2014.2.17-19 (ポスター発表).
- (2) 反応集積化手法を用いた簡便迅速なフラーレンの触媒的官能基化の開発
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- (3) Cu-Catalyzed C-H Amination of Hydrofullerenes Leading to 1,4-Difunctionalized Fullerenes
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- (4) Cu-Catalyzed C-H Amination of Hydrofullerenes Leading to 1,4-Difunctionalized Fullerenes
Si, W.; Lu, S.; Asao, N.; Yamamoto, Y.; Jin, T. 10th International Symposium on Carbanion Chemistry (ISCC-10), Kyoto, Japan, 2013.9.23-26 (ポスター発表).
- (5) Pd-Catalyzed Cascade Crossover-Annulation of *o*-Alkynylarylhalides and Diarylacetylenes Leading to Dibenzo[*a,e*]pentalenes
Jin, T.; Zhao, J.; Oniwa, K.; Asao, N.; Yamamoto, Y. 60th Symposium on Organometallic Chemistry，学習院大学，東京，2013.9.12-14 (ポスター発表)
- (6) Pd-Catalyzed Cascade Crossover-Annulation of *o*-Alkynylarylhalides and Diarylacetylenes Leading to Dibenzo[*a,e*]pentalenes
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- (7) 遷移金属触媒を用いた官能基化フラーレンの選択的合成
金鉄男，第12回化学系薬学若手研究者セミナー，東北大学薬学研究科，仙台，2013.8.24 (招待講演)

- (8) 反応集積化手法を用いた簡便迅速なフラーレンの触媒的官能基化の開発
金鉄男, 「新学術領域集積反応化学」平成 25 年度第 1 回成果報告会, 京都大学桂
キャンパス, 京都, 2013.6.3-4 (口頭発表)
- (9) Nanoporous Metals as Catalysts
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- (10) Cyclopenta-fused polycyclic aromatic hydrocarbons as highly balanced ambipolar
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Zhang, X.; Kanagasekaran, T.; Oniwa, K.; Jin, T.; Shimotani, H.; Asao, N.; Tanigaki, K.;
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- (11) Ambipolar organic light emitting field effect transistors with gold electrodes
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- (12) Gain Properties in Newly Synthesized Thiophene-Furan-Phenylene Co-oligomer Single
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- (13) Diffusion in Nanoporous Gold: Insights from Spectral Graph Theory
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- (14) フラン環を有する複素環/フェニレンコオリゴマーの発光電界効果トランジスタ
への応用
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業大学, 東京, 2012.10.14-17 (ポスター発表).
- (15) Nanoporous Gold Catalyst for Highly Active and Selective Semihydrogenation of
Alkynes: Remarkable Effect of Amine Additives
Jin, T.; Yan, M.; Ishikawa, Y.; Bao, M.; Asao, N.; Yamamoto, Y. 59th Symposium on
Organometallic Chemistry, Osaka, Japan, 2012.9.13-15 (口頭発表).

3 . 特許

該当なし。

4 . 学会・シンポジウム等の開催状況

該当なし。

5 . 受賞等

該当なし。

6 . 新聞報道等

(1) 触媒反応: ナノ多孔質金で水素化還元する

AIMResearch, 2013 年 2 月 25 日

(2) 有機エレクトロニクス: 曲がっているところが肝心

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(3) A Versatile Method for Substituted Dibenzopentalenes.

Swager, T. M.; Goods, J. B. *Synfacts* **2013**, 9(1), 1061.

(4) Nanoporous Gold Catalyst for the Selective Semihydrogenation of Alkynes.

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7 . 国民との科学・技術対話

該当なし。

8 . 領域内の共同研究の準備・実施状況とその成果

該当なし。