平成２４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) Selective imine formation from alcohols and amines catalyzed by polymer incarcerated gold/palladium alloy nanoparticles with molecular oxygen as an oxidant. Soulé, Jean-François; Miyamura, Hiroyuki; Kobayashi, Shū, *Chem. Commun.* **2013**, *49*, 355-357. (**Selected as Back Cover, Highlighted in Synfacts:** *Synfacts* **2013**, *9*, 0345-0345.)

(2) A Cooperative Catalytic System of Platinum/Iridium Alloyed Nanoclusters and a Dimeric Catechol Derivative: An Efficient Synthesis of Quinazolines Through a Sequential Aerobic Oxidative Process. Yuan, Hao; Yoo, Woo-Jin; Miyamura, Hiroyuki; Kobayashi, Shū, *Adv. Synth. Catal.* **2012**, *354*, 2899-2904. (**Highlighted in Synfacts:** *Synfacts* **2013**, *9*, 0228-0228.)

(3) Discovery of a Metalloenzyme-like Cooperative Catalytic System of Metal Nanoclusters and Catechol Derivatives for the Aerobic Oxidation of Amines. Yuan, Hao; Yoo, Woo-Jin; Miyamura, Hiroyuki; Kobayashi, Shū, *J. Am. Chem. Soc.* **2012**, *134*, 13970-13973. (**Picked up to Chemical & Engineering News**, **Highlighted in Synfacts:** *Synfacts* **2012**, *8*, 1384-1384.)

(4) Polymer-Incarcerated Chiral Rh/Ag Nanoparticles for Asymmetric 1,4-Addition Reactions of Arylboronic Acids to Enones: Remarkable Effects of Bimetallic Structure on Activity and Metal Leaching. Yasukawa, Tomohiro; Miyamura, Hiroyuki; Kobayashi, Shū, *J. Am. Chem. Soc.* **2012**, *134*, 16963-16966. (**Highlighted in Synfacts:** *Synfacts* **2012**, *9*, 0115-0115.)

(5) Selective Lactam Formation from Amino Alcohols Using Polymer-Incarcerated Gold and Gold/Cobalt Nanoparticles as Catalysts under Aerobic Oxidative Conditions. Soulé, Jean-François; Miyamura, Hiroyuki; Kobayashi, Shū, *Asian J. Org. Chem.* **2012**, *1*, 319-321. (**Selected as Inside front cover**)

(6) α-Hydroxylation of 1,3-Dicarbonyl Compounds Catalyzed by Polymer-incarcerated Gold Nanoclusters with Molecular Oxygen. Miyamura, Hiroyuki; Kobayashi, Shū, *Chem. Lett.* **2012**, *41*, 976-978. (**Highlighted in Synfacts:** *Synfacts* **2012**, *8*, 1383-1383.)

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) (Invited Lecture) 高分子固定化金属ナノクラスター触媒と反応集積化による効率的合成反応
Miyamura, Hiroyuki, 東京医科歯科大学　生体材料工学研究所　若手研究者セミナー, 東京医科歯科大学, 東京, 日本, 2013.3.1 (口頭発表).

(2) (Invited Lecture) Powerful organic transformations based on aerobic oxidation and reaction integration using metal nanocluster catalysts
Miyamura, Hiroyuki; Kobayashi, Shū, Reaxys® Lecture （第９回平田メモリアルレクチャー併設）, Nagoya University, Nagoya, Japan 2013.1.9 (口頭発表).

(3) Amineoxidase-like cooperative catalytic system of metal nanoclusters and catechol derivatives
Miyamura, Hiroyuki; Yuan, Hao; Yoo, Woo-Jin, Kobayashi, Shū, IKCOC-12, Rihga Royal Hotel Kyoto, Kyoto, Japan 2012.11.15 (口頭発表).

(4) Development of highly functionalized nanocatalysts toward integrated synthesis involving aerobic oxidation as a key reaction
Miyamura, Hiroyuki, The 1st Innovative Area Symposium, Grant-in-Aid for Scientific Research on Innovative Areas sponsored by MEXT, “Organic Synthesis Based on Reaction Integration. Development of New Methods and Creation of New Substances”, Osaka University, Osaka, Japan, 2012.11.12, (口頭発表).

(5) Powerful organic transformations catalyzed by polymer incarcerated gold and multimetallic nanoclusters
Miyamura, Hiroyuki; Kobayashi, Shū, Gold 2012, Keio Plasa Hotel Tokyo, Tokyo, Japan 2012.9.6 (口頭発表).

３．特許

なし

４．学会・シンポジウム等の開催状況

なし

５．受賞等

なし

６．新聞報道等

(1) New System For Aerobic Oxidations
Chemical & Engineering News, Volume 90, Issue 31, p. 13, 2012.8.20 (2012.8.17web)

(2) 東大、化合物鏡像体を作り分ける「不斉反応」に成功−金属ナノクラスター触媒使用
日刊工業新聞、2012.11.22

(3) Back cover: Selective imine formation from alcohols and amines catalyzed by polymer incarcerated gold/palladium alloy nanoparticles with molecular oxygen as an oxidant.
Soulé, Jean-François; Miyamura, Hiroyuki; Kobayashi, Shū, *Chem. Commun.* **2013**, *49*, 415-416.

(4) Inside Cover: Selective Lactam Formation from Amino Alcohols Using Polymer-Incarcerated Gold and Gold/Cobalt Nanoparticles as Catalysts under Aerobic Oxidative Conditions.
Soulé, Jean-François; Miyamura, Hiroyuki; Kobayashi, Shū, *Asian J. Org. Chem.* **2012**, *1*, 286-286.

７．国民との科学・技術対話

化学への招待〜平成２４年度東京大学高校生一日化学教室開催、2012.7.27
高校生 8 人（女 2、男 6）に我々の研究室で開発した金触媒を用いた酸素酸化反応を実際に行い、体験してもらった。また、触媒反応やクロマトグラフィー等の基礎実験操作、NMR 等の測定機器の仕組みについての簡単な講義を行った。

８．領域内の共同研究の準備・実施状況とその成果

なし