

平成23年度 研究業績

白川誠司 (京都大学大学院理学研究科、A01班 公募班員)

1. 発表論文等 (査読付き論文, 著書, 総説等の発表状況)

- (1) Efficient Asymmetric Synthesis of a Bicyclic Amino Acid as a Core Structure of Telaprevir  
Shirakawa, S.; Liu, Y.; Usui, A.; Maruoka, K. *ChemCatChem* **2012**, *4*, in press (DOI: 10.1002/cctc.201200081).
- (2) The Direct Catalytic Asymmetric Aldol Reaction of  $\alpha$ -Substituted Nitroacetates with Aqueous Formaldehyde under Base-Free Neutral Phase-Transfer Conditions  
Shirakawa, S.; Ota, K.; Terao, S. J.; Maruoka, K. *Org. Biomol. Chem.* **2012**, *10*, Advanced Article (DOI: 10.1039/C2OB07193B).
- (3) Catalytic Asymmetric Synthesis of Axially Chiral *o*-Iodoanilides by Phase-Transfer Catalyzed Alkylations  
Shirakawa, S.; Liu, K.; Maruoka, K. *J. Am. Chem. Soc.* **2012**, *134*, 916–919.
- (4) Asymmetric Neutral Amination of Nitroolefins Catalyzed by Chiral Bifunctional Ammonium Salt in Water-Rich Solvent  
Wang, L.; Shirakawa, S.; Maruoka, K. *Angew. Chem. Int. Ed.* **2011**, *50*, 5327–5330.
- (5) Diastereo- and Enantioselective Conjugate Addition of  $\alpha$ -Substituted Nitroacetates to Maleimides under Base-Free Neutral Phase-Transfer Conditions  
Shirakawa, S.; Terao, S. J.; He, R.; Maruoka, K. *Chem. Commun.* **2011**, *47*, 10557–10559.
- (6) Phase-Transfer Catalyzed Asymmetric Synthesis of 1,1-Disubstituted Tetrahydroisoquinolines  
Shirakawa, S.; Liu, K.; Ito, H.; Le, T. N.; Maruoka, K. *Adv. Synth. Catal.* **2011**, *353*, 2614–2618.
- (7) Phase-Transfer Catalysis: Non-Natural-Product-Derived PTC  
Shirakawa, S.; Maruoka, K. In *Science of Synthesis: Asymmetric Organocatalysis 2*; Maruoka, K. ed.; Georg Thieme Verlag KG: Stuttgart-New York, 2012; Chapter 2.3.2, pp 551–599.
- (8) Asymmetric  $\alpha$ -Functionalization of Carbonyl Compounds and Alkylation of Enolates  
Shirakawa, S.; Maruoka, K. In *Science of Synthesis: Water in Organic Synthesis*; Kobayashi, S. ed.; Georg Thieme Verlag KG: Stuttgart-New York, 2012; Chapter 5.6, pp 601–615.
- (9) 中性条件下で進む不斉相間移動反応 –生体内反応系により近い反応系を実現!!–  
白川誠司, 丸岡啓二, *化学*, **2012**, *67* (2), 18–22.

## 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) Base-Free Neutral Phase-Transfer Reaction System

Shirakawa, S. Second International Collaborative and Cooperative Chemistry Symposium, The University of Queensland, Queensland, Australia, 2011.10.31–11.2 (招待講演).

### (2) キラル相間移動触媒反応の新展開 –塩基を用いない中性条件下での環境調和型キラル相間移動触媒反応–

白川誠司, 社団法人 新化学技術推進協会 先端化学・材料技術部会 講演会, 新化学技術推進協会会議室, 東京, 2011.6.30 (招待講演).

### (3) Phase-Transfer Catalyzed Asymmetric Synthesis of 1,1-Disubstituted Tetrahydro- $\beta$ -carboline and Tetrahydroisoquinolines

Shirakawa, S.; Liu, K.; Ito, H.; Le, T. N.; Maruoka, K. The 7th International Symposium on Intergrated Synthesis (ISIS-7), Maiko Villa Kobe, Kobe, Japan, 2011.10.9–10 (ポスター発表).

### (4) Phase-Transfer Catalyzed Diastereo- and Enantioselective Conjugate Additions of $\alpha$ -Substituted Nitroacetates to Maleimides under Neutral Conditions

Terao, S. J.; Shirakawa, S.; Maruoka, K. The 2nd International Symposium on Process Chemistry (ISPC 2011), Kyoto International Conference Center, Kyoto, Japan, 2011.8.10–12 (ポスター発表).

### (5) Asymmetric Phase-Transfer-Catalyzed Construction of Quaternary Carbon Center in Chiral Cyclic Amines

Liu, K.; Ito, H.; Shirakawa, S.; Maruoka, K. 5th *ChemComm* International Symposium, Kyoto University, Kyoto, Japan, 2011.5.16 (ポスター発表).

### (6) Phase-Transfer Catalyzed Diastereo- and Enantioselective Conjugate Additions of $\alpha$ -Substituted Nitroacetates to Maleimides under Neutral Conditions

Terao, S. J.; Shirakawa, S.; Maruoka, K. 5th *ChemComm* International Symposium, Kyoto University, Kyoto, Japan, 2011.5.16 (ポスター発表).

### (7) Asymmetric Neutral Amination of Nitroolefins Catalyzed by Chiral Bifunctional Ammonium Salt in Water-Rich Solvent

Wang, L.; Shirakawa, S.; Maruoka, K. 5th *ChemComm* International Symposium, Kyoto University, Kyoto, Japan, 2011.5.16 (ポスター発表).

## 3. 特許

#### 4. 学会・シンポジウム等の開催状況

#### 5. 受賞等

- (1) Lijia Wang [博士研究員 (A01 班, 公募班員, 白川誠司, 共同研究者)]  
Best Poster Award in 5th *ChemComm* International Symposium, 2011.5.16.

#### 6. 新聞報道等

(1) **Selected as a Hot Paper in *Angew. Chem.***

Asymmetric Neutral Amination of Nitroolefins Catalyzed by Chiral Bifunctional Ammonium Salt in Water-Rich Solvent. Wang, L.; Shirakawa, S.; Maruoka, K. *Angew. Chem. Int. Ed.* **2011**, *50*, 5327–5330.

#### 7. 国民との科学・技術対話

#### 8. 領域内の共同研究の準備・実施状況とその成果