

平成23年度 研究業績

戸部義人 (大阪大学基礎工学研究科、A03 班 計画班員)

1. 発表論文等 (査読付き論文, 著書, 総説等の発表状況)

- (1) One Building Block, Two Different Nanoporous Self-Assembled Monolayers: a Combined STM and Monte Carlo Study  
Adisoejoso, J.; Tahara, K.; Lei, S.; Szabelski, P.; Rżysko, W.; Inukai, K.; Blunt, M. O.; Tobe, Y.\*; De Feyter, S.\* *ACS Nano* **2012**, *6*, 897-903.
- (2) Chemistry of Anthracene–Acetylene Oligomers XX: Synthesis, Structures, and Self-Association of Anthracene–Anthraquinone Cyclic Compounds with Ethynylene Linkers  
Iwanaga, T.; Miyamoto, K.; Tahara, K.; Inukai, K.; Okuhata, S.; Tobe, Y.; Toyota, S.\* *Chem. Asian. J.* in press.
- (3) Electrophilic Transannular Cyclization of Octadehydrodibenzo[12]annulene Reexamined: Indication of the Formation of Both *anti*- and *syn*-Indenofluorenes  
Takeda, T.; Inukai, K.; Tahara, K.; Tobe, Y.\* *J. Org. Chem.* **2011**, *76*, 9116-9121.
- (4) Formation of a Non-Crystalline Bimolecular Porous Network at a Liquid/Solid Interface  
Tahara, K.; Ghijssens, E.; Matsushita, M.; Szabelski, P.; De Feyter, S.\*; Tobe, Y.\* *Chem. Commun.* **2011**, *47*, 11459-11461.
- (5) Control and Induction of Surface Confined Homochiral Porous Molecular Networks  
Tahara, K.; Yamaga, H.; Ghijssens, E.; Inukai, K.; Adisoejoso, J.; Blunt, M. O.; De Feyter, S.\*; Tobe, Y.\* *Nat. Chem.* **2011**, *3*, 714-719.
- (6) Indeno[2,1-*a*]fluorene: An Air-Stable *ortho*-Quinodimethane Derivatives  
Shimizu, A.; Tobe, Y.\* *Angew. Chem. Int. Ed.* **2011**, *50*, 6906-6910.
- (7) Molecular Pentagonal Tiling: Self-Assemblies of Pentagonal-Shaped Macrocycles at Liquid/Solid Interfaces  
Tahara, K.; Balandina, T.; Furukawa, S.; De Feyter, S.\*; Tobe, Y.\* *CrystEngComm* **2011**, *14*, 5551-5558.
- (8) Mixing Behavior of Alkoxyated Dehydrobenzo[12]annulenes at the Solid-Liquid Interface: Scanning Tunneling Microscopy and Monte Carlo Simulations  
Lei, S.; Tahara, K.; Müllen, K.; Szabelski, P.; Tobe, Y.\*; De Feyter, S.\* *ACS Nano* **2011**, *5*, 4145-4157.
- (9) Direct Dendronization of Polystyrenes using Dendritic Diarylcarbenium Ion Pools  
Nokami, T.; Watanabe, T.; Musya, N.; Morofuji, T.; Tahara, K.; Tobe, Y.; Yoshida, J.\* *Chem. Commun.* **2011**, *47*, 5575-5577.

- (10) PtCl<sub>2</sub>-Catalyzed Cyclization of *o*-Diethynylbenzene Derivatives Triggered by Intramolecular Nucleophilic Attack  
Miki, K.; Kuge, H.; Umeda, R.; Sonoda, M.; Tobe, Y.\* *Synth. Commun.* **2011**, *41*, 1077-1087.
- (11) Rhenium-Catalyzed Benzannulation of *o*-Alkynylbenzaldehyde with Alkynes to Multiple 2,3-Disubstituted Naphthalenes  
Umeda, R.; Kaiba, K.; Morishita, S.; Nishiyama, Y.\* *ChemCatChem* **2011**, *3*, 1743-1746.
- (12) Synthesis of Dibenz[*a,h*]anthracenes by Pd-Catalyzed Intramolecular Double-Cyclization of (*Z,Z*)-*p*-Styrylstilbenes  
Umeda, R.; Miyake, S.; Nishiyama, Y.\* *Chem. Lett.* **2012**, *41*, 215-217.
- (13) 幾何学模様をもつ二次元の多孔性分子ネットワーク  
田原一邦, 戸部義人\*, *化学*, **2012**, *67* (3), 12-16.

## 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) Control and Induction of Surface Confined Homochiral Porous Molecular Networks  
Tahara, K.; Yamaga, H.; Ghijsens, E.; Inukai, K.; Adisojoso, J.; Blunt, M. O.; De Feyter, S.; Tobe, Y. 14th International Symposium on Novel Aromatic Compounds (ISNA-14), Eugene, Oregon, USA, 2011.7.24-29 (口頭発表) .
- (2) Benzannulation of *o*-Alkynylbenzaldehyde with Alkyne to Highly Elaborated Polycyclic Aromatic Compounds  
Umeda, R.; Morishita, S.; Kaiba, K.; Nishiyama, Y.; Tobe, Y. 14th International Symposium on Novel Aromatic Compounds (ISNA-14), Eugene, Oregon, USA, 2011.7.24-29 (ポスター発表) .
- (3) Molecular Propellers Consisting of Three Dehydrobenzo[14]annulene Blades  
Nobusue, S.; Mukai, Y.; Tahara, K.; Tobe, Y. 14th International Symposium on Novel Aromatic Compounds (ISNA-14), Eugene, Oregon, USA, 2011.7.24-29 (ポスター発表) .
- (4) Formation of Unprecedented Polycyclic Aromatic Hydrocarbons by BuLi-induced Tandem Cyclization of Dehydrobenzo[14]annulene  
Nobusue, S.; Shimizu, A.; Tahara, K.; Tobe, Y. 14th International Symposium on Novel Aromatic Compounds (ISNA-14), Eugene, Oregon, USA, 2011.7.24-29 (ポスター発表) .
- (5) Synthesis and Photophysical Properties of 1,4,5,8-Tetrakis(arylethynyl)naphthalene  
Takeda, T.; Tobe, Y. 14th International Symposium on Novel Aromatic Compounds (ISNA-14), Eugene, Oregon, USA, 2011.7.24-29 (ポスター発表) .
- (6) Indenofluorene Isomers: 6-5-6-5-6 Membered Ring Hydrocarbons with Singlet Biradical Character

- Tobe, Y.; Shimizu, A. 14th International Symposium on Novel Aromatic Compounds (ISNA-14), Eugene, Oregon, USA, 2011.7.24-29 (ポスター発表) .
- (7) 分子をならべてつくる幾何学模様－2次元分子集合体のSTM観測－  
戸部義人, 化学千一夜 2011, 和歌山, 2011.7.29-30 (招待講演)
- (8) Metastable Aromatic Hydrocarbons: Zethrenes and Indenofluorenes  
Shimizu, A.; Hibi, D.; Tobe, Y. The 15th Korea-Japan Seminar on Organic Chemistry, Gyeonju, Korea, 2011.9.30-10.3 (口頭発表)
- (9) Indeno[2,1-a]fluorene Dimers Formed by Transannular Cyclization of Dehydrobenzo[14]annulene  
Nobusue, S.; Shimizu, A.; Tahara, K.; Tobe, Y. The Seventh International Symposium on Integrated Synthesis (ISIS-7), Hyogo, Japan, 2011.10.9-10 (ポスター発表) .
- (10) Benzannulation Approach to Synthesis of Highly Elaborated Helical Molecules Having 2,3-Disubstituted Naphthalene Units  
Umeda, R.; Morishita, S.; Nishiyama, Y.; Tobe, Y. The Seventh International Symposium on Integrated Synthesis (ISIS-7), Hyogo, Japan, 2011.10.9-10 (ポスター発表) .
- (11) Tailored Pores in Two-Dimensional Molecular Networks on a Surface: Light Driven Pore Size Modulation  
Tahara, K.; Inukai, K.; Adisojoso, J.; Balandina, T.; De Feyter, S.; Tobe, Y. 10th International Symposium on Functional pi-Electron System (Fpi-10), Beijing, China, 2011.10.13-17 (口頭発表) .
- (12) Synthesis of Multiple 2,3-Disubstituted Naphthalenes by Rhenium-Catalyzed Benzannulation of *o*-Alkynylbenzaldehyde with Alkynes  
Umeda, R.; Morishita, S.; Nishiyama, Y.; Tobe, Y. International Symposium on Catalysis and Fine Chemicals (C&FC2011), Nara, Japan, 2011.12.4-8 (ポスター発表) .
- (13) Homochiral Two-Dimensional Porous Molecular Networks of Dehydrobenzo[12]annulene Derivatives: Control and Induction  
Tahara, K.; Yamaga, H.; Ghijssens, E.; Inukai, K.; De Feyter, S.; Tobe, Y. Supramolecular Chemistry Conference 2012, Lanzarote, Spain, 2012.2.20-23 (口頭発表) .
- (14) Functional Nano Pores Created on Surfaces by Self-Assembly of Triangular-Shaped Macrocycles via van der Waals Interactions  
Tobe, Y. Supramolecular Chemistry Conference 2012, Lanzarote, Spain, 2012.2.20-23 (招待講演) .

### 3. 特許

なし

#### 4. 学会・シンポジウム等の開催状況

- (1) The Seventh International Symposium on Integrated Synthesis (ISIS-7), Hyogo, 2011.10.9-10 (戸部義人, 総括班班員).
- (2) 新学術領域研究「反応集積化の合成化学 革新的手法の開拓と有機物質創成への展開」第2回成果報告会, 大阪大学, 2012.1.28-29 (戸部義人, 総括班班員).

#### 5. 受賞等

- (1) 信末俊平 (博士2年)  
ポスター賞 The Seventh International Symposium on Integrated Synthesis (ISIS-7), Hyogo, 2011.10.10.
- (2) 戸部義人 (教授)  
2011年度有機合成化学協会賞 (学術的) 2012.2.17
- (3) 田原一邦 (助教)  
2011年度日本化学会進歩賞 2012.3.26.

#### 6. 新聞報道等

なし

#### 7. 国民との科学・技術対話

なし

#### 8. 領域内の共同研究の準備・実施状況とその成果

- (1) 共同研究先：岡山理科大学, 豊田研究室 (A03 班, 公募班員)  
受け入れ人員 (予定) : 津屋卓也 (博士課程学生)  
受け入れ期間 (予定) : 2012 年中に予定  
共同研究内容 : 走査型トンネル顕微鏡 (STM) を用いた新規共役化合物が形成する単分子膜の観察  
共同研究成果 :