

## cfaed Seminar Series

**DATE:** August 31, 2018  
**TIME:** 02:00 PM – 03:30 PM  
**LOC:** Seminar room HEM 219 (second floor)  
Walther-Hempel-Building, Mommsenstr. 4, 01069 Dresden



### GUEST SPEAKER:

**Prof. Yoshito Tobe** (Professor Emeritus, Guest Professor)

Osaka University

Center of Nano Science and Technology, The Institute of Scientific and Industrial Research

### TITLE:

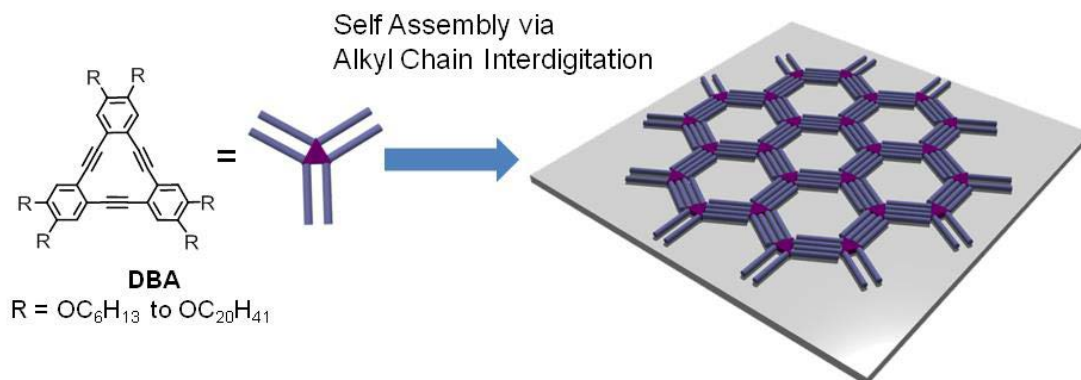
**“Porous Self-Assembled Monolayers at Solution/Graphite Interfaces: From On-Surface Chirality to Molecular Lithography”**

### ABSTRACT:

Porous networks formed by molecular self-assembly have attracted a great deal of interest in connection with not only potential applications in tailor-made catalysis and molecular electronics but also fundamental principle of crystallization. For more than a decade we have studied on-surface self-assembly at the liquid/solid interface of a series of triangle building blocks, alkoxy-substituted dehydro[12]annulenes (DBAs), which exhibit remarkable adaptability to many instances thank to their versatility in synthetic modifications. These include (i) pore size control by changing the alkoxy chain length,<sup>1</sup> (ii) parity effect by using even or odd number alkoxy chains,<sup>2</sup> (iii) generation and reversion of supramolecular chirality on surfaces by introducing stereocenters into the alkoxy chains,<sup>3</sup> (iv) chemical modification of the pore interior for selective co-adsorption of guest molecules by introducing functional groups at the alkoxy chain terminals.<sup>4</sup> Our recent efforts are focused on epitaxial multilayer formation and the use of the non-covalent molecular networks as masks for periodical surface modification. After general introduction, the lecture will focus on the on-surface chirality issue followed by *enantioselective* multilayer formation and periodical surface modification using the networks as removable masks, i.e. molecular lithography.

### References:

1. Tahara, K.; Furukawa, S.; Uji-i, H.; Uchino, T.; Ichikawa, T.; Zhang, J.; Mamdouh, W.; Sonoda, M.; De Schryver, F. C.; De Feyter, S.; Tobe, Y. *J. Am. Chem. Soc.* **2006**, *128*, 16613.
2. Ghijssens, E.; Ivasenko, O.; Tahara, K.; Yamaga, H.; Itano, S.; Balandina, T.; Tobe, Y.; De Feyter, S. *ACS Nano* **2013**, *7*, 8031.
3. Tahara, K.; Yamaga, H.; Ghijssens, E.; Inukai, K.; Adisoejoso, J.; Blunt, M. O.; De Feyter, S.; Tobe, Y. *Nat. Chem.* **2011**, *3*, 714; Fang, Y.; Ghijssens, E.; Ivasenko, O.; Cao, H.; Noguchi, A.; Mali, K. S.; Tahara, K.; Tobe, Y.; De Feyter, S. *Nat. Chem.* **2016**, *8*, 711.
4. Tahara, K.; Inukai, K.; Adisoejoso, J.; Yamaga, H.; Balandina, T.; Blunt, M. O.; De Feyter, S.; Tobe, Y. *Angew. Chem. Int. Ed.* **2013**, *52*, 8373.



## BIOGRAPHY:

### EDUCATION

- 1970–1974 Osaka University, School of Engineering, Bachelor
- 1974–1976 Osaka University, Graduate School of Engineering, Master
- 1976–1979 Osaka University, Graduate School of Engineering, Ph.D.  
Advisor: Prof. Yoshinobu Odaira

### PROFESSIONAL POSITIONS

- 1979–1983 Assistant Professor, School of Engineering, Osaka University
- 1983–1992 Senior Lecturer, School of Engineering, Osaka University
- 1987–1988 Visiting Professor, The University of Chicago, Host: Prof. Philip E. Eaton
- 1992–1998 Associate Professor, Graduate School of Engineering Science, Osaka University
- 1998–2017 Professor, Graduate School of Engineering, Osaka University
- 2003–2007 Trustee, Osaka University
- 2007–2011 Dean, Graduate School of Engineering Science, Osaka University
- 2012–2014 Director, Center for Science and Technology under Extreme Conditions, Osaka University
- 2014–2017 Director, Center of Solar Energy Chemistry, Osaka University
- 2015–2017 Director, Institute for of Nanoscience Design, Osaka University
- 2017 Retirement from Osaka University
- 2017 Professor Emeritus  
Guest Professor, The Institute of Scientific and Industrial Research, Osaka University

### MAJOR HONORS AND AWARDS

- 1985 Chemical Society of Japan Award for Young Chemists
- 2000–2006 Project Leader of CREST, Japan Science and Technology Agency (JST)
- 2012 The Society of Synthetic Organic Chemistry Japan Award
- 2013 Award of The Japanese Association for Organic  $\pi$ -Electron Systems
- 2015 The Chemical Society of Japan Award
- 2017 The 2017 Nozoe Lecturer (17th International Symposium on Novel Aromatic Compounds)

### PROFESSIONAL SERVICE

- 2001– Member, International Advisory Board, International Symposium on Novel Aromatic Compounds (ISNA)
- 2000–2015 Organizer and Co-organizer, Pacificchem Symposia on “Pi-electronic Systems with Novel Structures” and related titles in 2000, 2005, 2010, and 2015
- 2007 Organizer, 12th International Symposium on Novel Aromatic Compounds (ISNA-12, Awaji Island)