第13回スマート分子材料講演会

Photoresponsive molecular machines, motors and materials

Alberto Credi 教授

講演概要:

The application of a bottom-up approach to the design, preparation and characterization of chemical systems that span from molecular scale devices and machines to bulk materials is a stimulating challenge of nanoscience [1]. The interest on this kind of systems arises from their ability to perform a (useful) function in response to chemical and/or physical stimulation. In this context, the use of light stimulation has several advantages, primarily because photons can be used to supply energy to the system (i.e., write) as well as to gain information about its state (i.e., read) [2].

Photochromic units, which undergo profound changes in their chemical and/or electronic structure upon light excitation, are highly interesting for the construction of photocontrollable molecular architectures. In the seminar I will describe recent investigations undertaken in our laboratories, aimed at photo-inducing and -controlling large-amplitude molecular motions, both under thermodynamic and kinetic viewpoints, in multicomponent (supramolecular) species that comprise photochromic elements [3]. Progress towards the construction of light driven molecular pumps working in solution [4] and photoswitchable solid materials for optoelectronic and gas storage applications will be presented [5].

References:

1. Balzani, V.; Credi, A.; Venturi, M. *Molecular Devices and Machines – Concepts and Perspectives for the Nano World*, Wiley-VCH: Weinheim, 2008.
2. Ceroni, P.; Credi, A.; Venturi, M. *Chem. Soc. Rev.* **2014**, *43*, 4068.
3. Avellini, T. et al., *Angew. Chem. Int. Ed.* **2012**, *51*, 1611; Baroncini, M.; Silvi, S.; Venturi, M.; Credi, A. *Angew. Chem. Int. Ed.* **2012**, *51*, 4223; Arduini, A. et al., *J. Am. Chem. Soc.* **2013**, *135*, 9924; Fasano, V. et al., *J. Am. Chem. Soc.* **2014**, *136*, 14245.
4. Ragazzon, G.; Baroncini, M.; Silvi, S.; Venturi, M.; Credi, A. *Nat. Nanotechnol.* **2015**, *10*, 70.
5. Baroncini, M. et al., *Nat. Chem.* **2015**, *7*, 634.

2016年3月17日(木)
10:00～12:00

場所:北海道大学　創成科学研究棟　5F　大会議室

講師:Alberto Credi 教授(ボローニャ大学　化学科)

お問い合わせ
北海道大学　電子科学研究所　スマート分子材料研究分野　玉置信之
TEL　011-706-9356　e-mail tamaoki@es.hokudai.ac.jp