第 718 回　化学・物質工学セミナー

「国際的な活躍が期待できる研究者の育成事業」第 15 回特別講演会を兼ねて、下記のとおりセミナーを開催致します。万障お繰り合わせの上、ご参加下さい。

Self-assembly strategies towards multifunctional coordination cages

Dr. Jacopo Tessarolo*, Prof. Dr. G. H. Clever
TU Dortmund University, Chemistry & Chemical Biology, Otto-Hahn Str. 6, Dortmund, Germany
*E-mail: jacopo.tessarolo@tu-dortmund.de

記

日時：令和 2 年 3 月 4 日（水）　14：00 ~ 15：30 まで
場所：多目的ホール（総合教育研究棟 2F）

Metal-mediated self-assembly of supramolecular assemblies has been proven to be an efficient tool for developing new materials with well-defined shapes and geometries. Banana-shaped bis-monodentate ligands and Pd(II) cations self-assemble to a broad range of compounds with different topologies (Pd_2L_4 cages, interpenetrated dimers, rings of various size)[1] and functions, such as allosteric guest binding or light-responsive behaviour[2]. However, the introduction of more than one function with a control over stoichiometry and stereochemistry of the assembled structure is still a challenge in this field. Therefore, we started to develop rational design strategies to assemble heteroleptic cages in a non-statistical fashion. We successfully used donor site engineering[3] (Figure b,c), geometric shape complementarity[4] (Figure d), and ring-embedded-metal approaches to obtain integrative self-sorting of multicomponent cages.

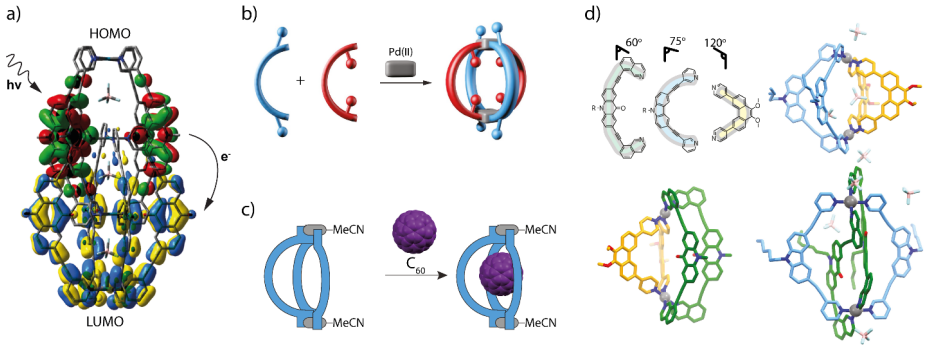

Figure 1. *a*) charge separation in interpenetrated double cages; *b*), *c)* donor site engineering approach; *d)* shape complementarity heteroleptic cages.

1. a) M. Han, D. M. Engelhard, G. H. Clever, *Chem. Soc. Rev.* **2014**, *43*, 1848; b) M. Frank, M. D. Johnstone, G. H. Clever, *Chem. Eur. J.* **2016**, *22*, 14104.
2. a) S. Löffler, J. Lübben, L. Krause, D. Stalke, B. Dittrich, G. H. Clever, *J. Am. Chem. Soc.* **2015,** *137,* 1060; b) M. Han, Y. Luo, B. Damaschke, L. Gómez, X. Ribas, A. Jose, P. Peretzki, M. Seibt, G. H. Clever, *Angew. Chem. Int. Ed.* **2016,** *55*, 445*;* c) R. Li, J. J. Holstein, W. G. Hiller, J. Andréasson, G. H. Clever, *J. Am.Chem. Soc.* **2019**, *141*, 2097.
3. a) B. Chen, J. J. Holstein, S. Horiuchi, W. G. Hiller, G. H. Clever, *J. Am. Chem. Soc.* **2019**, *141*, 8907; b) R. Zhu, W. M. Bloch, J. J. Holstein, S. Mandal, L. V. Schäfer, G. H. Clever, *Chem. Eur. J.* **2018**, *24*, 12976.
4. a) W. M. Bloch, Y. Abe, J. J. Holstein, C. M. Wandtke, B. Dittrich, G. H. Clever, *J. Am. Chem. Soc.* **2016**, *138*, 13750; b) W. M. Bloch, J. J. Holstein, W. Hiller, G. H. Clever, *Angew. Chem. Int. Ed.* **2017**, *56*, 8285; c) S. Saha, B. Holzapfel, Y.-T. Chen, K. Terlinden, P. Lill, C. Gatsogiannis, H. Rehage, G. H. Clever, *J. Am. Chem. Soc.* **2018**, *140, 17384.*

第 718 回セミナー世話人
工学研究科物質科学部門　作田絵里
（内線 2607）