



演題 : Formation of Rings, Chains and Nanotubes by Self-Assembly of Transition Metal Bis-Phospholane Complexes

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場所 : フロンティア応用科学研究棟 1階セミナー室

要旨 :

Since the development of the chiral bis-phosphine ligand DuPHOS by Burk et al. at DuPont, phospholane chemistry has been in the focus of interest.¹ Phospholanes are five-membered rings containing phosphorus and belong to the so-called “privileged structures”.² Due to the rigidity of the phospholane moiety, their corresponding transition metal complexes have found a wide range of applications in asymmetric catalysis, e.g., in hydroformylation.



However, bis-phospholane ligands with long flexible, semi-flexible or rigid spacers are scarce. These ligands are expected to combine the excellent properties of phospholanes with a backbone which allows them to be used as bridging ligands between metal complex fragments.

Selective formation of macrocycles, cages or chains is observed, without using high-dilution techniques, depending on the ligand backbone of bis-phospholane ligands. For gold(I), additionally polymeric chains, nanotubes or molecular wires are formed via aurophilic interactions. Examples of the fascinating coordination chemistry of highly flexible³ as well as semi-flexible⁴ bis-phospholane ligands with transition metals (e.g., Rh, Ni, Pd, Pt, Cu, Ag, Au³) will be presented.

1. M. J. Burk, J. E. Feaster and R. L. Harlow, *Organometallics* 1990, **9**, 2653.

2. T. P. Yoon and E. N. Jacobsen, *Science* 2003, **299**, 1691.

3. M. Streitberger, A. Schmied and E. Hey-Hawkins, *Inorg. Chem.* 2014, **53**, 6794.

4. A. Schmied, A. Straube, T. Grell, S. Jähnigen and E. Hey-Hawkins, *Dalton Trans.* 2015, **44**, 18760.

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