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il Dr. Jacopo Tessarolo

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terrà il seminario dal titolo:

Increasing Complexity in Multifunctional Coordination Cages

Metal-mediated self-assembly of supramolecular architectures has been proven to be an efficient tool for developing new materials with well-defined shapes and geometries. Proper ligand design and choice of metal centers, allow to obtain a large variety of compounds with nanosized pockets able to host specific guest molecules [1]. Besides the structural properties, appropriate choice of the building blocks enables to introduce functional groups in the system, such for instance chromophores or photoswitches [2]. However, most of the reported examples are highly symmetric structures carrying only one functionality. Introducing different ligands, and therefore different functionalities, can easily results in statistical mixtures, lacking of control over stoichiometry and stereochemistry. To overcome this, recent approaches have been developed to introduce multiple ligands in a non-statistical fashion, and to obtain heteroleptic cages [3]. Herein we report a new strategy, based on precise introduction of steric bulk, to form a $Pd_4LA_4LB_4$ tetrahedron (Figure 1a), retaining emission properties from one of the ligands [4]. Next, we exploited a consolidated strategy, namely shape complementarity assembly [5], to yield multifunctional cages where we combine chirality and emission properties, resulting in heteroleptic species showing circular polarized luminescence (CPL, Figure 1b), or electron donor and acceptor groups, achieving light induced charge separation (Figure 1c).

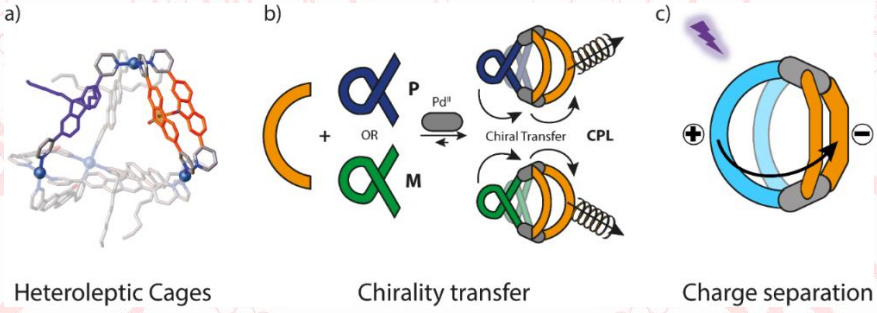

Figure 1. a) Heteroleptic tetrahedron promoted by backbone steric bulk; b) chirality transfer achieving CPL emitting heteroleptic cages; c) light induced charge separation in a Donor-Acceptor heteroleptic cage.

[1] *a)* Han M.; Engelhard D. M.; Clever G. H., *Chem. Soc. Rev.*, **2014**, 43, 1848-1860; *b)* Saha S.; Regeni I.; Clever G. H., *Coord. Chem. Rev.*, **2018**, *374*, 1-14.
[2] *a)* Regeni I.; Chen B.; Frank M.; Baksi A.; Holstein J.J.; Clever G.H., *Angew. Chem. Int. Ed.*, **2021**, *60*, 5673-5678; *b)* Lee H.; Tessarolo J.; Langbehn D; Baksi A.; Herges R.; Clever G.H., *J. Am. Chem. Soc.*, **2022**, *144*, 3099-3105.
[3] Pullen S.; Tessarolo J.; Clever G. H., *Chem. Sci.*, **2021**, *12*, 7269-7293.
[4] Tessarolo J.; Lee H.; Sakuda, E.; Umakoshi K.; Clever, G. H., *J. Am. Chem. Soc.*, **2021**, *143*, 6339-6344.
[5] *a)* Bloch W. M.; Abe Y.; Holstein J.J.; Wandtke C. M.; Dittrich B.; Clever, G. H.; *J. Am. Chem. Soc.*, **2016**, *138*, 13750-13755; *b)* Bloch W. M.; Holstein J. J.; Hiller W.; Clever, G. H., *Angew. Chem. Int. Ed.*, **2017**, *56*, 8285-8289.

La presenza della S. V. sarà molto gradita

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