



南京大学高济宇有机化学前沿讲座

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题目: **The chemo- and stereoselective self-assembly of pallado- and platino cryptophanes**

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Scientific Career:

- 2018 - CNRS Senior Researcher at the University of Strasbourg.
- 2001 - 2018 CNRS Senior Researcher at Univ. Bourgogne, Dijon.
- 1999 - 2001 CNRS Senior Researcher at Univ. Louis Pasteur in the group of Dr. J.-P. Sauvage.
- 1987 - 1999 CNRS Researcher at Univ. Louis Pasteur in the group of Dr. J.-P. Sauvage.
- 1988 JSPS Research fellow at the Industrial Products Research Institute, Tsukuba Science City (Japan).
- 1986 - 87 Post-doctoral fellow at UC Berkeley (USA).
- 1983 - 86 Graduate student at University Louis Pasteur, Strasbourg.
- 1982 - 83 National Service at the Institut National des Sciences Appliquées (INSA), Lyon.

Lecture abstract:

Cryptophanes are macropolycyclic cyclophanes made of two triply-bridged concave cyclotrimeratrylene analogues that can encapsulate a broad range of substrates, atomic and molecular^[1,2]. Pallado- and platino-cryptophanes self-assembled from carbonitrile-substituted chiral cyclotribenzylenes (CTB) 1 and 2 and $[M(dppp)](OTf)_2$ ($M = Pd$ and Pt ; $dppp = 1,3$ -bis(diphenylphosphino)-propane) in 2:3 ratio in chlorinated solvents^[3]. The pallado-cryptophanes were obtained exclusively in chiral, anti form in solution at room temperature, whatever the solvent used. However the achiral syn form was identified as the major isomer of $[Pd_3(dppp)_3(1)_2]^{6+}$ at low temperature in CD_2Cl_2 , and as the minor isomer of $[Pt_3(dppp)_3(1)_2]^{6+}$ at room temperature. $[M_3(dppp)_3(1)_2](OTf)_6$ ($M = Pd$ and Pt) crystallized from chloroform solutions in the anti form and their cavity contained a $CHCl_3$ molecule. The metallo-cryptophanes were obtained in optically active forms and their chiroptical properties were measured. DFT calculations showed evidence for ICD effects from the CTB components to the bridging metal complex fragments. 1H NMR spectroscopy and ESI-MS demonstrated that the self-assembly of metallo-cryptophanes from two different CTBs (1 and 2) was chemoselective. In the case of palladium, only metallo-cryptophanes of homogeneous composition were formed, whereas in the case of platinum, minor amounts of mixed-CTB metallo-cryptophane $[Pt_3(dppp)_3(1)(2)]^{6+}$ were also detected^[4].

Selected publications:

1. Brotin, T.; Dutasta, J.-P. *Chem. Rev.* **2009**, 109, 88.
2. Henkelis, J. J.; Hardie, M. J. *Chem. Commun.* **2015**, 51, 11929.
3. Schaly, A.; Rousselin, Y.; Chambron, J.-C.; Aubert, E.; Espinosa, E. *Eur. J. Inorg. Chem.* **2016**, 832.
4. Schaly, A.; Meyer, M.; Chambron, J.-C.; Jean, M.; Vanthuynne, N.; Aubert, E.; Espinosa, E.; Zorn, N.; Leize-Wagner, E. submitted for publication.

欢迎参加!

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