SEMINÁRIO DIA 06/05/2022

Sala do GoogleMeet - 10 horas

"N-Heterocyclic carbenes as toolkits for the preparation of supramolecular assemblies and switchable catalysts".

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Enfoque:

During the last five years we devoted our research toward broadening the applications of planar extended π-conjugated NHC ligands for the preparation of organometallic-based supramolecular structures,[1] including their use as hosts for some selected organic and inorganic guests, together with the catalytic properties displayed by some selected host-guest inclusion complexes. Our contribution describes the design of several Ni-,[2] Pd-[3] and Au-based[4] metallorectangles, and metalloprisms, which we used for the encapsulation of several organic substrates, such as polycyclic aromatic hydrocarbons (PAHs) and fullerenes. We also described a series of di-gold(I)-based metallotweezers,[5] and even a new mechanically interlocked molecule (MIM) that we named *clippane*.[6] Depending on their structural features, these species were used for the recognition of a variety of organic substrates, such as electron-deficient aromatic substrates, polycyclic aromatic hydrocarbons and heavy metal cations. In addition to all this, we recently focused our attention on the design of redox-switchable catalysts based on the use of a naphthalene-di-imide core. [7] We will show how these redox switchable catalysts can be used for unveiling key information about the mechanism of certain catalytic reactions.

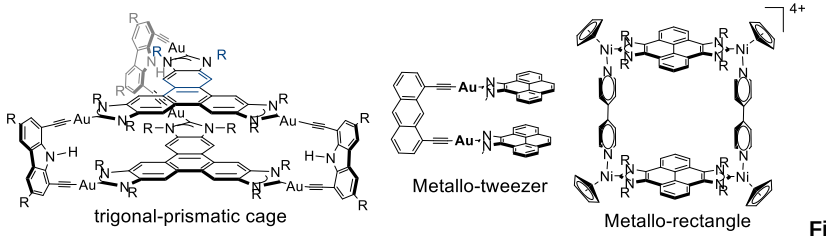

Figure 1. Some representative organometallic-based metallo-supramolecules

References

[1] S. Ibáñez, M. Poyatos, E. Peris, *Acc. Chem. Res.* **2020**, *53*, 1401–1413. [2] V. Martinez-Agramunt, D. G. Gusev, E. Peris, *Chem. Eur. J.* **2018**, *24*, 14802-14807. [3] V. Martinez-Agramunt, T. Eder, H. Darmandeh, G. Guisado-Barrios, E. Peris, *Angew. Chem. Int. Ed.* **2019**, *58*, 5682-5686; C. Vicent, V. Martinez-Agramunt, V. Gandhi, C. Larriba-Andaluz, D. G. Gusev, E. Peris, *Angew. Chem. Int. Ed.* **2021**, *60*, 15412-15417. [4] S. Ibáñez, E. Peris, *Angew. Chem. Int. Ed.* **2019**, *58*, 6693-6697; S. Ibañez, E. Peris, *Angew. Chem. Int. Ed.* **2020**, *59*, 6860-6865. [5] S. Ibáñez, M. Poyatos, E. Peris, *Angew. Chem. Int. Ed.* **2017**, *56*, 9786-9790; S. Ibáñez, M. Poyatos, E. Peris, *Angew. Chem. Int. Ed.* **2018**, *57*, 16816-16820. [6] S. Ibáñez, C. Vicent, E. Peris, *Angew. Chem. Int. Ed.* **2022**, *61*, e202112513. [7] C. Ruiz-Zambrana, A. Gutierrez-Blanco, S. Gonell, M. Poyatos, E. Peris, *Angew. Chem. Int. Ed.* **2021**, *60*, 20003-20011; C. Ruiz-Zambrana, M. Poyatos, E. Peris, *ACS-Catalysis* **2022**, 10.1021/acscatal.1022c00613.