

LIGHT-DRIVEN REDUCTIONS USING WELL-DEFINED COORDINATION COMPLEXES.

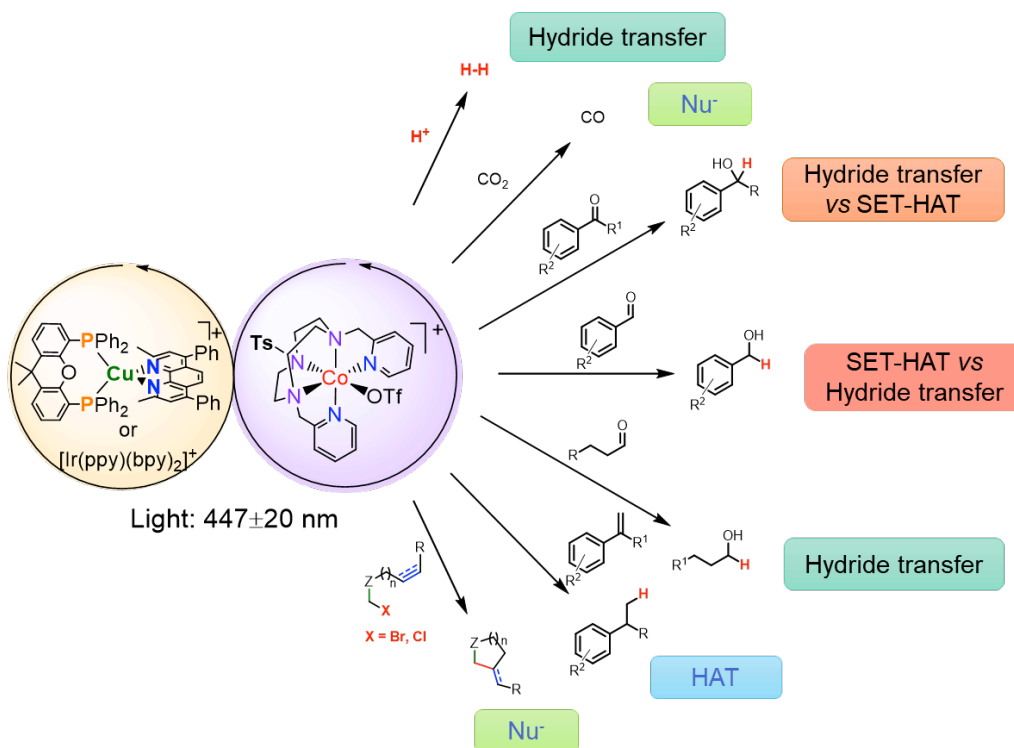
J. Lloret-Fillol*

^a Institut Català d'Investigació Química (ICIQ), The Barcelona Institute of Science and Technology, Avinguda Paisos Catalans 16, 43007 Tarragona (Spain).

^b ICREA, Passeig Luíis Companys 23, 08010 Barcelona (Spain)

e-mail: jlloret@iciq.es

One of the most appealing research areas is the mechanistic understanding of multi-electron multi-proton processes, which is a central part in the activation of small molecules such as CO₂ and H₂O. In this line, we have discovered that well-defined cobalt coordination complexes based on the tacn moiety are highly efficient homogeneous catalysts for reduction of water,^[1-2] organic substrates^[3] and CO₂. Interestingly, the low valent cobalt intermediate also promote the highly-challenging visible-light reductive radical cyclizations reactions from unactivated chloroalkanes, which open new avenues in photoredox catalysis. In the presentation we will discuss the synergy between experiments and theory to gain insights into intermediates and the operative mechanisms.



[1] Call A., Codolà Z., Acuña-Parés F., Lloret-Fillol J., *Chem. Eur. J.* **2014**, *20*, 6171-6183.

[2] A. Call, F. Franco, N. Kandoth, S. Fernández, M. González-Béjar, J. Pérez-Prieto, J.M. Luis, J. Lloret-Fillol *Chem. Sci.* **2018**, DOI: 10.1039/C7SC04328G.

[3] Call, A., Casadevall, C., Acuña-Pares, F., Casitas Montero, A., Lloret Fillol, J., *Chem. Sci.* **2017**, *8*, 4739-4749.