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Ligand-Enabled Gold Redox Catalysis

Salle 2 à 10h30 - Conférence en anglais

Traditionally, gold complexes have served as Lewis acid catalysts for the activation of C–C multiple bonds (Scheme, LHS). Over the years, gold catalysis has evolved beyond this classical role to encompass Au(I)/Au(III) redox catalysis (Scheme, RHS). The pioneering work by Zhang and Toste group revealed the role of external oxidants to overcome the high redox potential of Au(I)/Au(III) couple (E^0 = +1.41 V) and to facilitate two-electron redox cycle. Later, the Glorius group introduced the merged gold/photoredox strategy to circumvent the need for a stoichiometric oxidant. Recently, the Waser's group demonstrated that ethynylbenziodoxolones (EBXs) are powerful reagents for redox gold catalysis.

All the above strategies were not amenable to the use of aryl halides, and thus their use in gold-catalyzed cross-coupling reactions remained forbidden. Building on Bourissou's pioneering discovery that P,N-ligated gold complexes facilitate oxidative addition to aryl halides, ligand-enabled gold redox catalysis has emerged as an important topic. This talk will highlight our recent efforts in ligand-enabled gold redox catalysis with aryl halides, with a particular focus on enantioselective gold redox catalysis.

Illustration : *Le grand stūpa de Sânchî © Nitin T. Patil*

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