OXIDANT-FREE Au(I)/Au(III) C-HETEROATOM CROSS-COUPLING CATALYSIS

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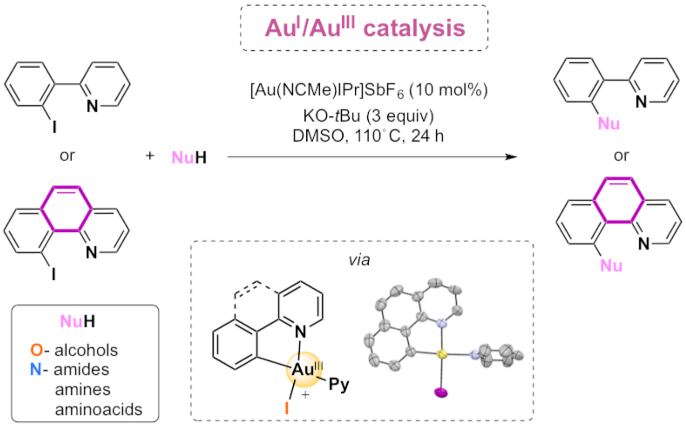
Although classically regarded only as superior Lewis acids for the activation of C-C multiple bonds towards nucleophiles,[1a] gold complexes have been also engaged into 2-electron redox processes applied to cross coupling transformations.[1b] However, the access to key Au(III) intermediates has been limited to harsh sacrificial oxidants, while the oxidative addition at Au(I), the entry point to many catalytic procedures, has been largely under debate.[1c-d] Here we present methodology to engage standard Au(I)(IPr)Cl complexes as catalysts for a broad scope heteroatom-nucleophile cross-coupling processes (phenols, aliphatic alcohols, amides, anilines, aliphatic amines and aminoacids) using selected substrates such as 2-(2-halophenyl)pyridine and 10-halobenzo[h]quinolone.[2] The latter substrate allowed to crystallographically characterize the competent (N,C)-cyclometalated Au(III) complexes via the oxidative addition of an Ar-I bond. Indeed, the broad nucleophile scope exhibited further supports the engagement of gold into classical palladium- or copper-catalyzed cross-coupling reactions, and is envisioned to open new opportunities in gold catalysis.



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