

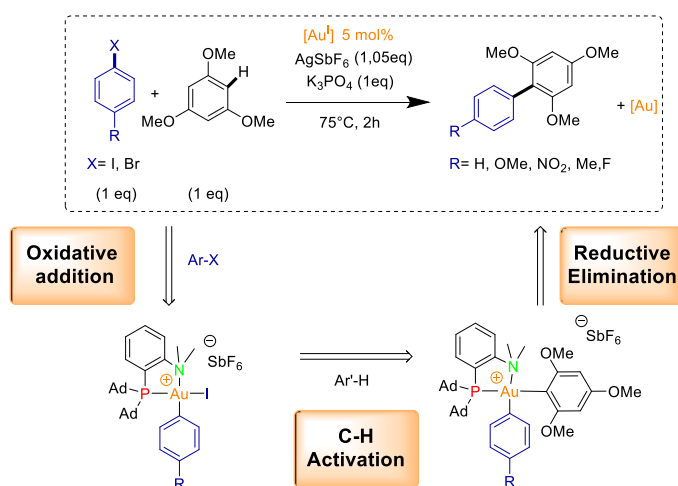
Au(I)/Au(III) CATALYZED ARYLATION OF C_{sp}²-H BONDS

Jessica Rodriguez,^{*a} Abdallah Zeineddine,^a Abderrahmane Amgoune,^a Didier Bourissou,^a

^a Laboratoire Hétérochimie Fondamentale et Appliquée, Université Paul Sabatier/CNRS UMR 5069, 118 Route de Narbonne, 31062 Toulouse Cedex 09, France.
e-mail: jessica.rodriguez.villar@gmail.com

Oxidative addition is well established for late transition metals, but extremely rare in gold chemistry. Until now, catalytic cross-coupling reactions mediated by gold complexes required the use of stoichiometric amounts of strong external oxidants to promote Au(I) to Au(III) oxidations, or the use of strong electrophiles under photochemical conditions.¹

Our group has explored the reactivity of gold complexes toward elementary steps of transition metal catalysis,² and has shown that appropriate ligand design enables C-X oxidative addition reactions to be achieved with gold under mild conditions, opening the way to new reactivity patterns. We have recently demonstrated that hemi-labile (P,N) bidentate ligands can provide a suitable balance between reactivity and stability of the key Au(III) species.³ The derived cationic Au(I) complex readily promotes oxidative addition of a large scope of aryl iodides and bromides. The potential of (P,N) Au(I) complexes in Au(I)/Au(III) catalysis has also been demonstrated by the development of the first gold-catalyzed C-C cross-coupling from aryl halides.



We have recently obtained encouraging results in the C-H activation of indoles, giving rise to C3-arylated products, in contrast to other transition metal catalyzed systems.

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