

CHEMISTRY COLLOQUIUM

Friday, November 6, 2009
11:25 AM, Room 111, Life Sciences

“Palladium-Catalyzed Coupling of Aryl Halides and Aryl Tosylates with Ammonia and Aldehydes”

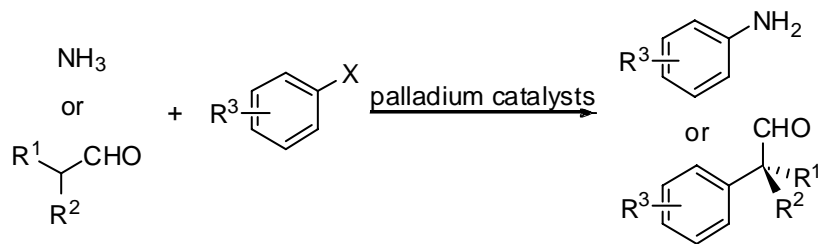
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The palladium-catalyzed α -arylation of carbonyl compounds and amination of aryl halides and sulfonates have become general and powerful methods for the preparation of biologically active compounds and important synthetic intermediates. The α -arylation process encompasses an impressive collection of nucleophiles including ketones, esters, amides, nitriles, malonates, while the amination reactions include primary and secondary alkylamines as well as aromatic amines. However, until recently, aldehydes and ammonia were absent from the list of suitable nucleophiles for the respective α -arylation and amination processes. The α -aryl aldehydes and primary arylamines that are generated from the coupling of these nucleophiles with aryl halides are synthetic intermediates for the manufacture of pharmaceuticals and dyes.³

Over the past two years, we have successfully developed conditions and discovered palladium catalysts that efficiently couple aldehydes and ammonia with aryl halides. These coupling reactions conducted under our conditions exhibit the broadest substrate scope and employ the lowest catalyst loadings reported to date. The results of these studies are presented.



X = Cl, Br, I, OTs, OTf