

Arylsilanolates: Mechanistic Insight and Preparative Uses in the Fluoride-Free Cross-Coupling Reaction of Biaryl Compounds.

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Stable Pd(II) precatalysts are commonly used in transition-metal catalyzed reactions. Therefore, understanding the mechanism of the reduction of Pd(II) complexes to catalytically active Pd(0) species is important. One example, allylpalladium(II) chloride dimer (APC), can be reduced by alkali arylsilanolates with formation of allyloxysilanes (1). The reduction is rapid in the presence of chelating ligands and for a number of silanolates.

Further, we report the use of phosphine oxides as stabilizing ligands for the palladium-catalyzed formation of biaryl compounds. The cross-coupling of dimethyl(4-methoxyphenyl)silanolate catalyzed by APC is rapid and general for a number of aryl bromides (2).

