

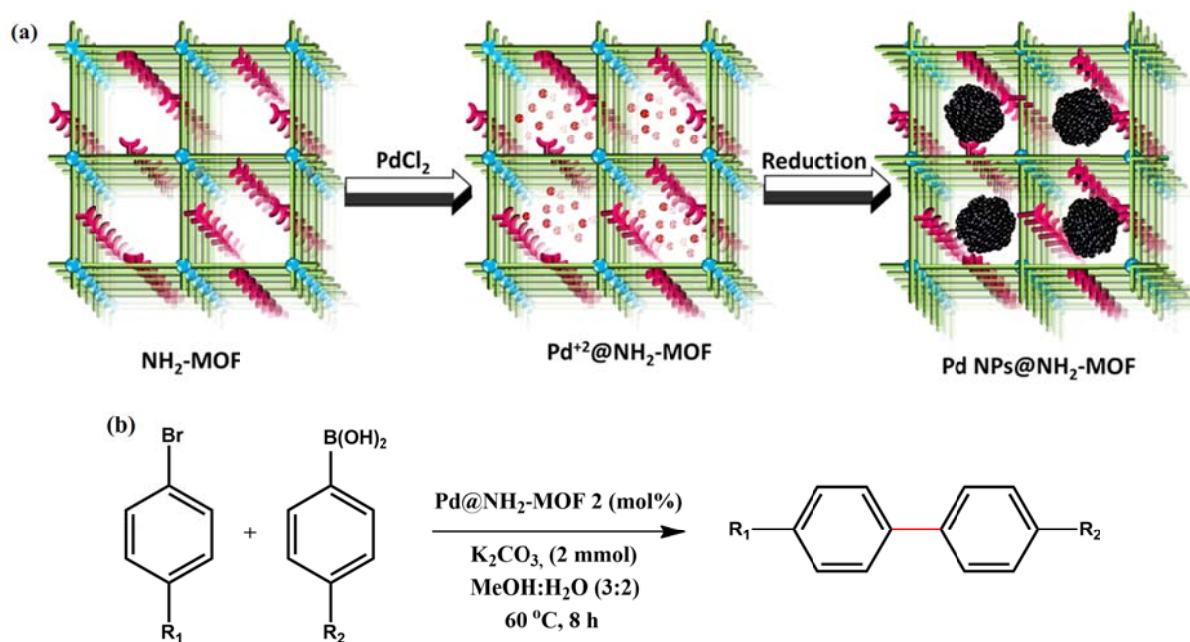
# Palladium Nanoparticles Embedded Amine Functionalized MOF: A Highly Active Heterogeneous Catalyst for Suzuki-Miyaura Coupling Reaction

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**Abstract:** Palladium nanoparticles were incorporated successfully to the pores of amine-functionalized metal–organic framework  $\{[\text{Cd}(2\text{-NH}_2\text{bdc})(4\text{-bpmh})]\}_n \cdot 2(\text{H}_2\text{O})$  ( $\text{NH}_2\text{-MOF}$ ), [2-NH<sub>2</sub>bdc = 2-amino benzene dicarboxylic acid; 4-bpmh = N,N-bis-pyridin-4-ylmethylene-hydrazine] through wet chemical method and structure was confirmed by using ICP-MS, TEM, XPS, EDS and PXRD analysis. The palladium supported NH<sub>2</sub>-MOF shows enhanced catalytic activity towards Suzuki-Miyaura coupling reactions. This method is well tolerable with the electron donating as well as with the electron withdrawing groups in very good yields. Additionally, the shape and size selectivity of the catalyst has been investigated by using substrates of larger molecular diameter. Furthermore, the catalyst found to be stable, easy to recycle and can be reused at least for six times without losing its catalytic activity.



**Figure:** (a) Schematic illustration of palladium nanoparticles loading to the pores of NH<sub>2</sub>-MOF via two step mechanism. (b) Catalytic reaction of Pd@NH<sub>2</sub> MOF.

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