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Cage-Templated Synthesis of Highly Stable Palladium Nanoparticles and their Catalytic Activities in Suzuki–Miyaura Coupling

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Suzuki–Miyaura Reaction Catalyzed by Cage-Templated Palladium Nanoparticles

Category

Polymer-Supported Synthesis

Key words

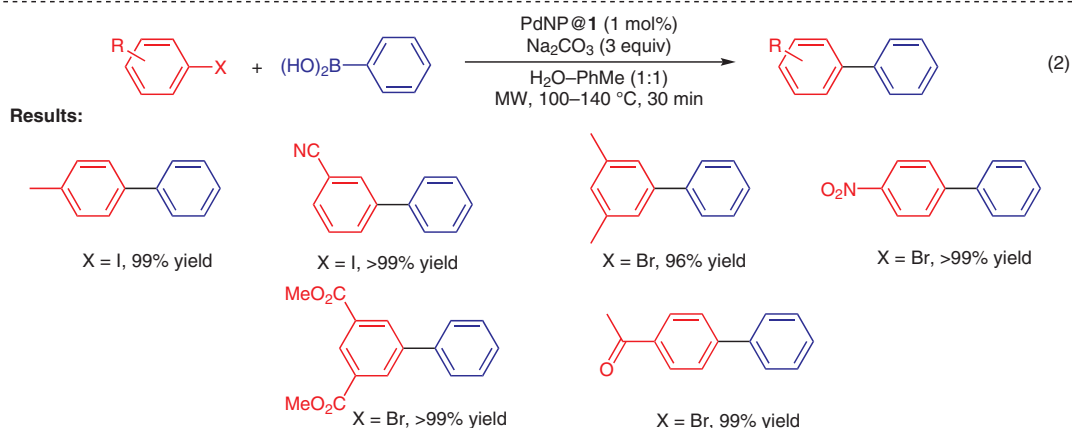
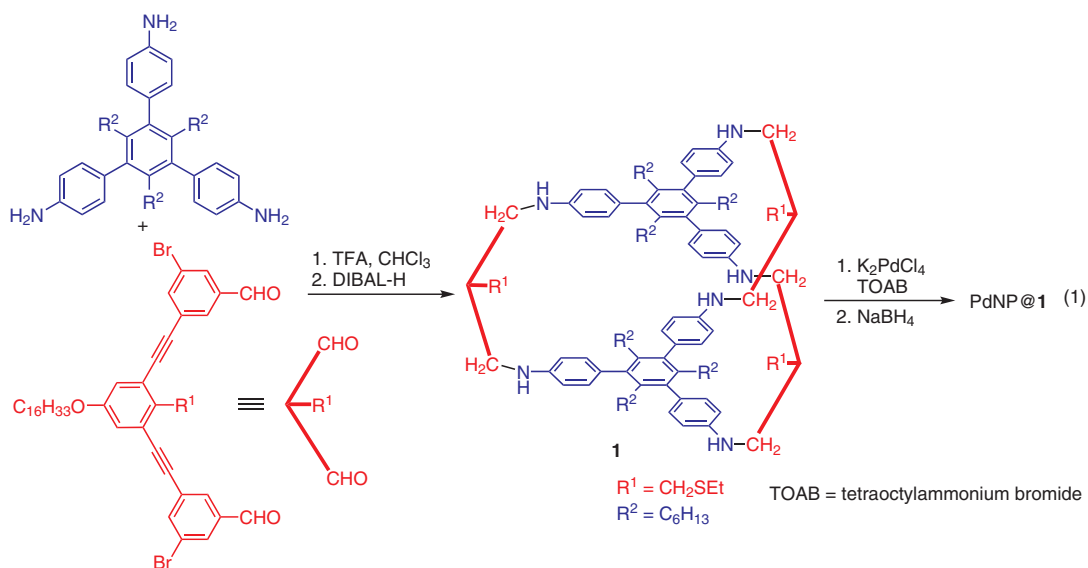
palladium catalysis

nanoparticles

Suzuki–Miyaura coupling

biaryls

Synfact
of the month



Significance: A palladium nanocatalyst (PdNP@1) prepared by a cage-templated synthesis method (eq. 1), catalyzed the Suzuki–Miyaura coupling of phenylboronic acid with iodo- or bromobenzenes under microwave irradiation to give the corresponding biaryl products in 96–99% yield (eq. 2).

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Comment: PdNP@1 was characterized by means of UV–Vis, ¹H NMR (DOSY), HR-TEM, and EDS analyses. In the reaction of 4-iodotoluene with phenylboronic acid, the catalyst was reused three times without loss of its catalytic activity. The reactivity of PdNP@1 was higher than that of commercially available palladium catalysts such as Pd(PPh₃)₄ or Pd/C.