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Nano-silica supported palladium catalyst: Synthesis, characterization and application of its activity in Sonogashira cross-coupling reactions

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Abstract– This study deals about preparation of palladium(II) complex of 3,5-bis(2-benzothiazolyl)pyridine supported on nano silica functionalized with trimethoxysilylpropyl chloride, Pd(II)Cl₂-BTP@TMSP-nSiO₂. The synthesized heterogeneous catalyst was characterized by FT-IR, UV-Vis spectroscopies, field emission scanning electron microscopy, energy dispersive X-ray analysis, transmission electron microscopy and elemental analysis. Furthermore, the Pd(II)Cl₂-BTP@TMSP-nSiO₂ was found as a highly efficient catalyst in the Sonogashira cross-coupling of aryl halides (iodides, bromides and chlorides) with phenyl acetylene. This heterogeneous catalyst was easily recyclable and reused several times without significant loss of reactivity. Finally, its catalytic activity was compared with homogeneous catalyst to demonstrate the effect of supporting on the catalytic activity.

Keywords: *Sonogashira cross-coupling; Palladium complex; Nano silica; Aryl halide.*

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