

Nanocomposites and Nanomaterials

Novel Palladium (II) Schiff Base Complexes As a New Precursor For The Deposition on SBA-15 in $scCO_2$ Media

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All researcher focus on two critical questions in modern organic syntheses of carbon–carbon coupling reactions; how to minimize the catalyst cost as low as possible and how to improve the efficiency and reusability of the catalyst. Immobilization of the metals on solid support as a nanoparticle is one and versatil method for these questions. Different solid support such as; MW-CNT, silica, alumina, activated carbon, SBA-15 have been used as support material [1-2] and used different deposition technique for metal loading.

In this work, Schiff base ligand was synthesized by condensation of 2-fluoro 4-trifluoromethyl aniline with 2-hydroxy- 4-methyl benzaldehyde. Its palladium complex was synthesized and used as precursor for $scCO_2$ deposition process. The obtained SBA-15 supported palladium nanoparticle was characterized by XRD, ICP-OES and SEM. According to the ICP-OES results, palladium nanoparticles that have been deposited on SBA-15 were found 1.15 %. Palladium nanoparticles size was determined from XRD with a size range of 4.65 nm. The XRD pattern and SEM image of palladium nanoparticles is given in figure 1.

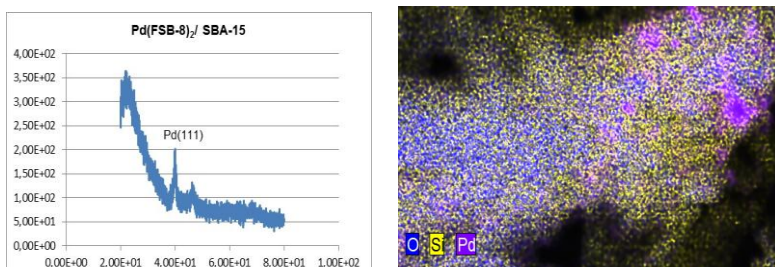


Figure 1. (a)XRD pattern of SBA-15 (b)SEM image of of SBA-15 Pd

Catalytic efficiency of Pd nanoparticles were tested on Suzuki coupling reaction over phenyl boronic acid and bromobenzene. The highest yield was obtained in etanol/ K_2CO_3 media (%89).

References :Peiyu, W.; Guoheng Z.;*Materials Res. Bulletin*, **2014**,59, 365–369.

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