Palladium Nanoparticles Supported onto Ionic Carbon Nanotubes

Significance: An aqueous solution of IL-f-MWCNTs 1 and Na₂PdCl₄ was hydrogenated under 1 atm of H₂ pressure for 30 min at room temperature to give Pd/IL-f-MWCNTs 2a (eq. 1). Direct anion exchange of the hydrophilic Br anion with NTf₂ and SbF₆⁻ afforded the hydrophobic Pd/IL-f-MWCNTs 2b and 2c, respectively (eq. 2). The catalytic activities of 2a–c were examined for the hydrogenation of trans-stilbene in MeOH. Pd/IL-f-MWCNT 2c with the SbF₆⁻ anion showed superior catalytic activity compared to 2a and 2b (eq. 3).

Comment: In this paper, the authors reported imidazolium-functionalized ionic multi-walled carbon nanotube (IL-f-MWCNT)-supported Pd nanoparticles as a catalyst for the hydrogenation of olefins. Pd/IL-f-MWCNT 2c was effectively immobilized in an ionic liquid, [bmim][SbF₆], with extraordinary stability. Thus, 2c/[bmim][SbF₆] was recovered by simple phase separation, and reused ten times without any loss of catalytic activity.