Preparation of Al_2O_3-encapsulated Ru Nanoparticle Catalysts for the Hydrodeoxygenation of Guaiacol

Indriyati[1,2], Adid Adep Dwiatmoko[1], 최재욱[1], 서동진[1],
하정명[1,†]
[1]KIST; [2]UST
(jmha@kist.re.kr[†])

Al_2O_3-encapsulated Ru nanoparticle (Ru@Al_2O_3) catalysts were synthesized by a simple one pot synthesis method using a PVP-stabilized Ru colloid solution. Because the alumina-encapsulated Ru nanoparticles havethe more metal-support interface, the catalytic activity of Ru@Al_2O_3 was significantly higher compared to the conventional alumina-supported Ru catalysts (Ru/Al_2O_3) for the liquid phase hydrodeoxygenation of Guaiacol, demonstrating three times higher conversion and four times higher oxygen removal. Ru@Al_2O_3 catalyst exhibited good selectivity to the production of cyclohexene, an important intermediate in various industrial processes.