

Sonochemical synthesis of palladium oxide@silica nanoparticle for the catalysis of selective alcohol oxidation with molecular oxygen

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Sonochemical method is easy and effective way to synthesize nanomaterial. Under ultrasound irradiation, novel metal precursor was reduced into metal nanoparticle with narrow size distribution. Additionally, catalyst supporting material was frequently used to prevent metal nanoparticles agglomeration. Most catalysts for organic chemistry are size dependent. Therefore, supported catalysts are generally applied in the reaction. In this study, we fabricated silica supported palladium oxide catalyst by ultrasound irradiation. Silica nanoparticles as supporting materials were fabricated by Stöber method. The composites have narrow size distribution and their average size of metal nanoparticle was 2.5 nm. Fabricated palladium oxide doped silica nanoparticles were applied to selective alcohol oxidation with molecular oxygen.