

Sonochemical synthesis of silica-cobalt oxide nanocomposites and its application to chemical recycling of polyethylene terephthalate

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Cobalt oxide has been brought great interests due to its wide usages in applications such as catalysis, magnetism, energy storage, and electrochemistry. In order to have high performance in catalytic reaction, cobalt oxide nanoparticles should maintain their high surface area. However, they usually agglomerate into larger clusters, losing their properties as nanoparticles. Silica substrate can support the cobalt oxides so that they do not aggregate and maintain their surface area without agglomeration. In this work, we report an ultrasound-assisted deposition of cobalt oxide on the silica nanoparticles produced with Stöber method. The fabricated cobalt oxide doped silica nanoparticles are used to test the possible applications in depolymerization of polyethylene terephthalate (PET).