

Heterogenization of Indium for the Friedel-Craft Benzoylation of Toluene

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摘要 Indium incorporated silica samples with different indium contents were synthesized using a template free sol-gel method. The silica used was extracted from rice husk (RH) and the resulting catalyst was labeled as RH-xIn (x = 5%, 10%, 15%, and 20%). From the N₂ adsorption analysis the presence of type IV isotherm in RH-blank and RH-xIn indicated the mesoporous nature of the catalysts. In the XRD pattern, a broad band at ca. 2θ = 25° was observed for all the catalysts which showed them to be amorphous. TEM micrographs revealed that the material is composed of nanoparticles. Friedel-Craft benzoylation of toluene was carried out using the RH-xIn catalyst. The optimum conditions for the benzoylation of toluene were determined and at 373 K, 100% conversion and 89% selectivity for the para-product (i.e. 4-methylbenzophenone) were obtained.

关键词: [rice husk](#) [sol-gel](#) [indium](#) [Friedel-Craft benzoylation](#) [Toluene](#)

Abstract: Indium incorporated silica samples with different indium contents were synthesized using a template free sol-gel method. The silica used was extracted from rice husk (RH) and the resulting catalyst was labeled as RH-xIn (x = 5%, 10%, 15%, and 20%). From the N₂ adsorption analysis the presence of type IV isotherm in RH-blank and RH-xIn indicated the mesoporous nature of the catalysts. In the XRD pattern, a broad band at ca. 2θ = 25° was observed for all the catalysts which showed them to be amorphous. TEM micrographs revealed that the material is composed of nanoparticles. Friedel-Craft benzoylation of toluene was carried out using the RH-xIn catalyst. The optimum conditions for the benzoylation of toluene were determined and at 373 K, 100% conversion and 89% selectivity for the para-product (i.e. 4-methylbenzophenone) were obtained.

Keywords: [rice husk](#), [sol-gel](#), [indium](#), [Friedel-Craft benzoylation](#), [Toluene](#)

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