The Heck synthesis of β-arylated ketones catalyzed by palladium immobilized on functional polysiloxane microspheres.

Autorzy

Anna Wirwis

Urszula Mizerska

Marek Cypryk

Anna M. Trzeciak

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Streszczenie

Palladium catalysts, obtained by the impregnation of $Pd(OAc)_2$ on aminopropyl- or pyridine-functionalized polysiloxane microspheres, were used in the Heck reaction of iodobenzene with 3-buten-2-one and 3-buten-2-ol at 120°C using an oil bath or microwave heating. The synthesis of 4-phenyl-3-buten-2-one was one-step arylation of ketone while 4-phenyl-2-butanone was formed in two-step arylation–isomerization sequential transformation of alcohol. A very low palladium loading, 0.05 mol%, was sufficient to obtain a yield of ketones higher than 90%. In recycling experiments, an effect of the functional group present in polysiloxane was observed and much better results were obtained for the aminopropyl-modified polymer. The catalyst was easily retrieved and reused in eight consecutive runs in the reaction of 3-buten-2-one, while with 3-buten-2-ol 11 subsequent cycles were performed with practically the same yield.

Słowa kluczowe

Heck coupling, palladium, polysiloxane microspheres, tandem reaction, β-arylated ketones

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