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Reusable and Magnetic Palladium and Copper Oxide Catalysts in Direct *ortho* and *meta* Arylation of Anilide Derivatives

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Magnetic Pd- and CuO-Catalyzed Regioselective Direct Arylation of Anilides

78% yield (o/m = 98/2)

Significance: Magnetite-supported copper oxide (CuO/Fe $_3$ O $_4$) or palladium nanoparticles (Pd/Fe $_3$ O $_4$) catalyzed the regioselective direct arylation of anilides with diaryliodonium triflates in 1,2-dichloroethane. CuO/Fe $_3$ O $_4$ exclusively afforded the *meta* arylation products in up to 99% yield, whereas Pd/Fe $_3$ O $_4$ gave *ortho* arylation products in up to 89% yield.

70% yield

89% yield

Comment: In the direct arylation of N-(o-tolyl)pivalamide with diphenyliodonium triflate, CuO/ Fe $_3$ O $_4$ was magnetically recovered and reused four times without loss of its catalytic performance. On the other hand, the catalytic activity of Pd/ Fe $_3$ O $_4$ decreased after one recycling. Hot filtration tests and TXRF analysis indicated that catalytically active soluble species were generated in situ from CuO/Fe $_3$ O $_4$ and Pd/Fe $_3$ O $_4$ during the reaction.

65% yield (o/m = 97/3) 77% yield (o/m = 98/2)

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Polymer-Supported Synthesis

Key words

palladium catalysis
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magnetite
arylation
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