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

**Significance:** Magnetite-supported copper oxide (CuO/Fe₃O₄) or palladium nanoparticles (Pd/Fe₃O₄) catalyzed the regioselective direct arylation of anilides with diaryliodonium triflates in 1,2-dichloroethane. CuO/Fe₃O₄ exclusively afforded the meta arylation products in up to 99% yield, whereas Pd/Fe₃O₄ gave ortho arylation products in up to 89% yield.

**Comment:** In the direct arylation of N-(o-tolyl)pivalamide with diphenyliodonium triflate, CuO/Fe₃O₄ was magnetically recovered and reused four times without loss of its catalytic performance. On the other hand, the catalytic activity of Pd/Fe₃O₄ decreased after one recycling. Hot filtration tests and TXRF analysis indicated that catalytically active soluble species were generated in situ from CuO/Fe₃O₄ and Pd/Fe₃O₄ during the reaction.

With CuO/Fe₃O₄, selected examples:

- **99% yield**
- **82% yield**
- **96% yield**
- **73% yield**
- **96% yield**

With Pd/Fe₃O₄, selected examples:

- **89% yield**
- **70% yield**
- **78% yield (o/m = 98/2)**
- **65% yield (o/m = 97/3)**
- **77% yield (o/m = 98/2)**