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Chemo- and Regioselective Hydrogenolysis of Diaryl Ether C–O Bonds by a Robust Heterogeneous Ni/C Catalyst: Applications to the Cleavage of Complex Lignin-Related Fragments
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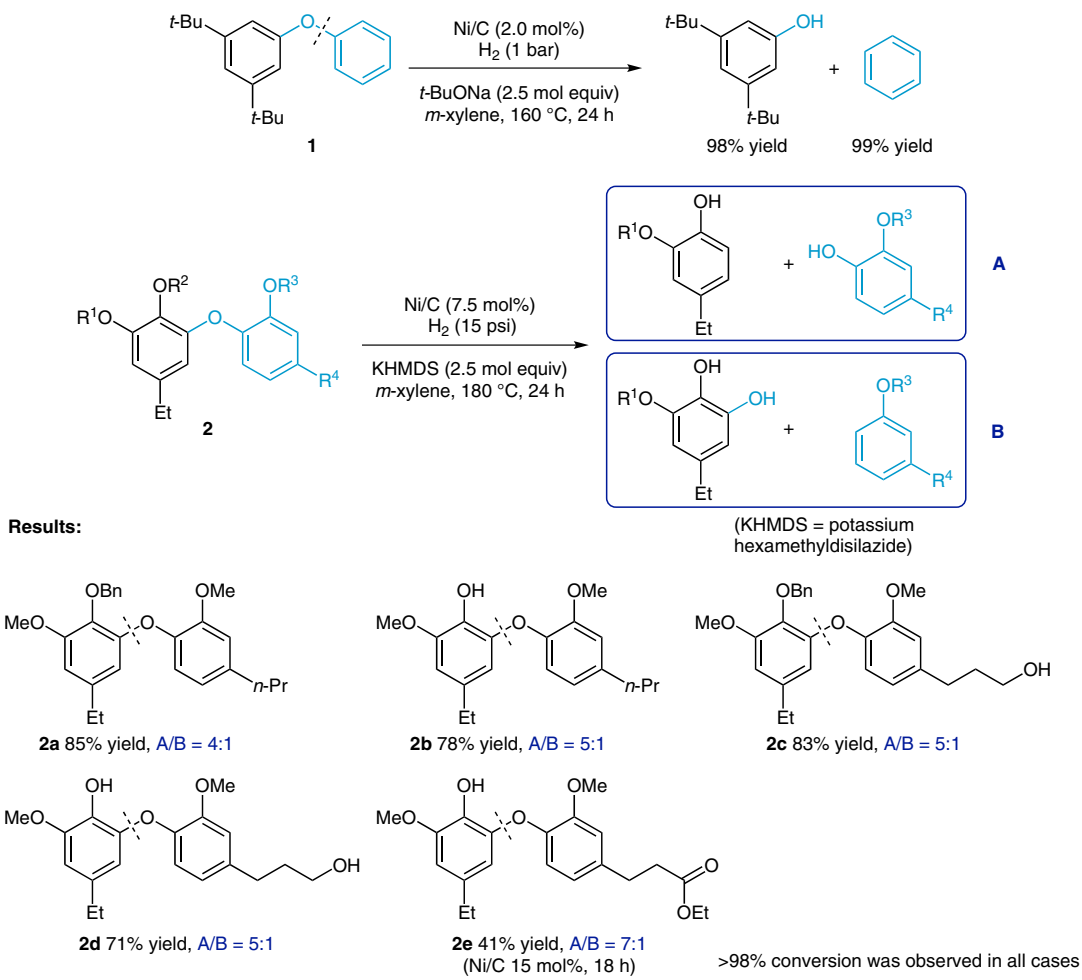
Hydrogenolysis of Diaryl Ether C–O Bonds Using a Nickel/Carbon Catalyst



Significance: The hydrogenolysis of compounds that mimic the diaryl ether moieties in lignin was catalyzed by nickel nanoparticles on carbon (Ni/C) in the presence of sodium *tert*-butoxide or potassium hexamethyldisilazide under hydrogen to give the corresponding arenes in >98% yield and high selectivity. The hydrogenolysis of ether **1** with Ni/C took place without significant aggregation of nickel particles [2–5 nm (1 h); 5–7 nm (24 h)].

Comment: [Ni(cod)$_2$] (10 mol%) catalyzed the hydrogenolysis of ether **1** at 180 °C for 24 hours with 20% conversion; during this period, the nickel particles aggregated from a size of 4–13 nm (1 h) to 17–23 nm (24 h), as observed by TEM. The authors previously reported that hydrogenolysis of **1** occurred in 45% conversion yield with a ligand-free nickel catalyst at 120 °C for 48 h (*Science* **2011**, *332*, 439).

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Category
Polymer-Supported Synthesis

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ethers
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