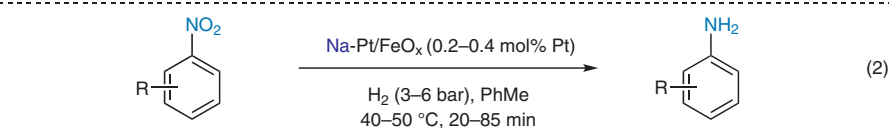
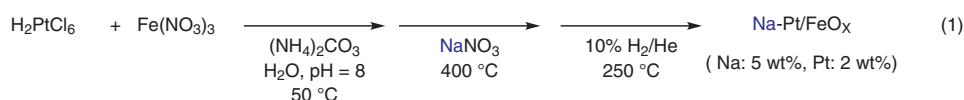
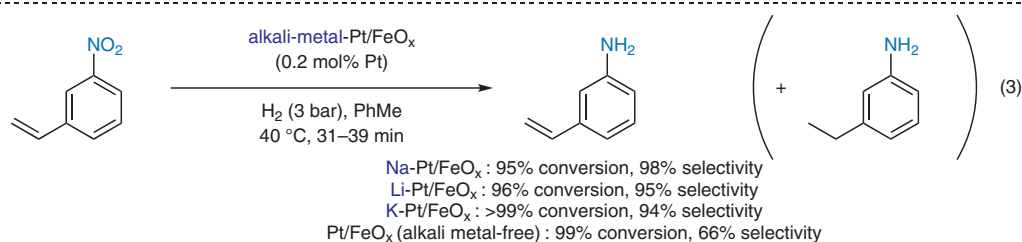
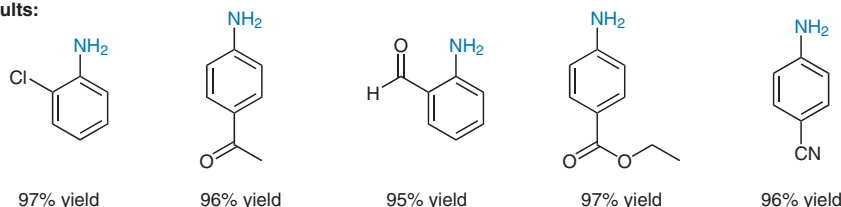


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 Remarkable Effect of Alkalis on the Chemoselective Hydrogenation of Functionalized Nitroarenes over High-Loading Pt/FeO<sub>x</sub> Catalysts  
*Chem. Sci.* **2017**, *8*, 5126–5131.

## Chemoselective Hydrogenation of Functionalized Nitroarenes to Anilines



Results:



**Significance:** A sodium-containing FeO<sub>x</sub>-supported platinum catalyst (Na-Pt/FeO<sub>x</sub>) was prepared by mixing H<sub>2</sub>PtCl<sub>6</sub> and Fe(NO<sub>3</sub>)<sub>3</sub> with (NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub> in water, followed by the treatment with NaNO<sub>3</sub>, calcination, and reduction with hydrogen (eq. 1). Na-Pt/FeO<sub>x</sub> catalyzed the chemoselective hydrogenation of substituted nitroarenes under hydrogen pressure to afford the corresponding anilines in 95–97% yield (eq. 2). In the hydrogenation of 3-nitrostyrene, Na-Pt/FeO<sub>x</sub> promoted the hydrogenation of the nitro group to give 3-aminostyrene in 95% conversion with 98% selectivity (eq. 3). The catalyst was reused three times without significant loss of its catalytic activity or chemoselectivity.

**Comment:** Other alkali-metal-containing Pt/FeO<sub>x</sub> catalysts (Li-Pt/FeO<sub>x</sub> and K-Pt/FeO<sub>x</sub>) also promoted the selective hydrogenation of 3-nitrostyrene to 3-aminostyrene in 96 to >99% conversion and 94–95% selectivity. Compared with alkali-metal-containing catalysts, alkali-metal-free Pt/FeO<sub>x</sub> showed a lower selectivity (99% conversion and 66% selectivity). The authors have previously reported the chemoselective hydrogenation of functionalized nitroarenes to the corresponding anilines by using FeO<sub>x</sub>-supported platinum catalysts prepared from H<sub>2</sub>PtCl<sub>6</sub>, Fe(NO<sub>3</sub>)<sub>3</sub>, and Na<sub>2</sub>CO<sub>3</sub> (*Nat. Commun.* **2014**, *5*, 5634).

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