

Electronic Supplementary Information

Base-free Chemoselective Transfer Hydrogenation of Nitroarenes to Anilines with Formic Acid as Hydrogen Source by Reusable Heterogeneous Pd/ZrP Catalyst

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Table S1. Parameters for Kinetic study of *p*-substituted nitroarenes.^a

Substrate	Initial Rate/ (min⁻¹)^b	log (initial rate)
Nitrobenzene	0.01250	-1.90
<i>p</i> -chloronitrobenzene	0.00560	-2.25
<i>p</i> -nitromethylbenzoate	0.00545	-2.26
<i>p</i> -nitrobenzeneonitrile	0.00196	-2.71

^a*Reaction Conditions:* Substrate (1 mmol), 2.1wt% Pd/ZrP (20 mg), FA (3 mmol), Ethanol (5 mL), 313 K, 30 min.

^bInitial rates of the each reaction were determined on the concentration of reactants as a function of time by GC.

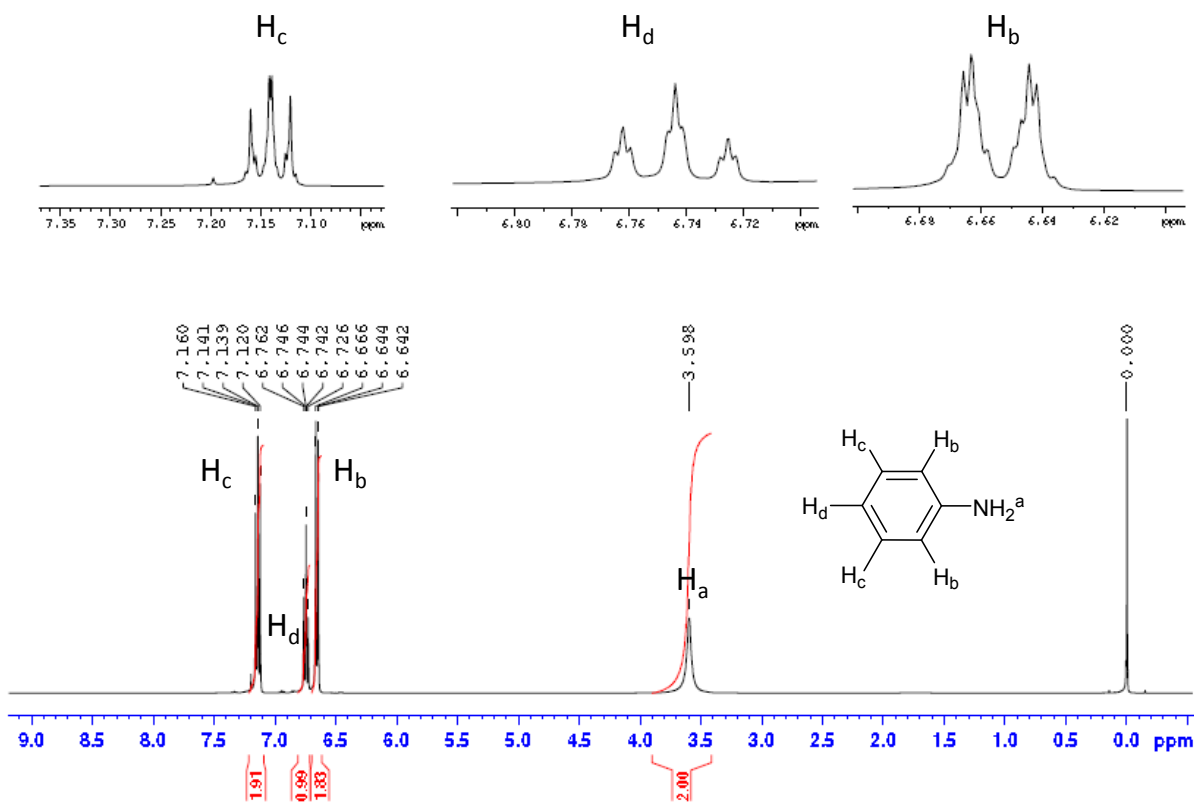


Fig. S1. $^1\text{H-NMR}$ of the isolated aniline.

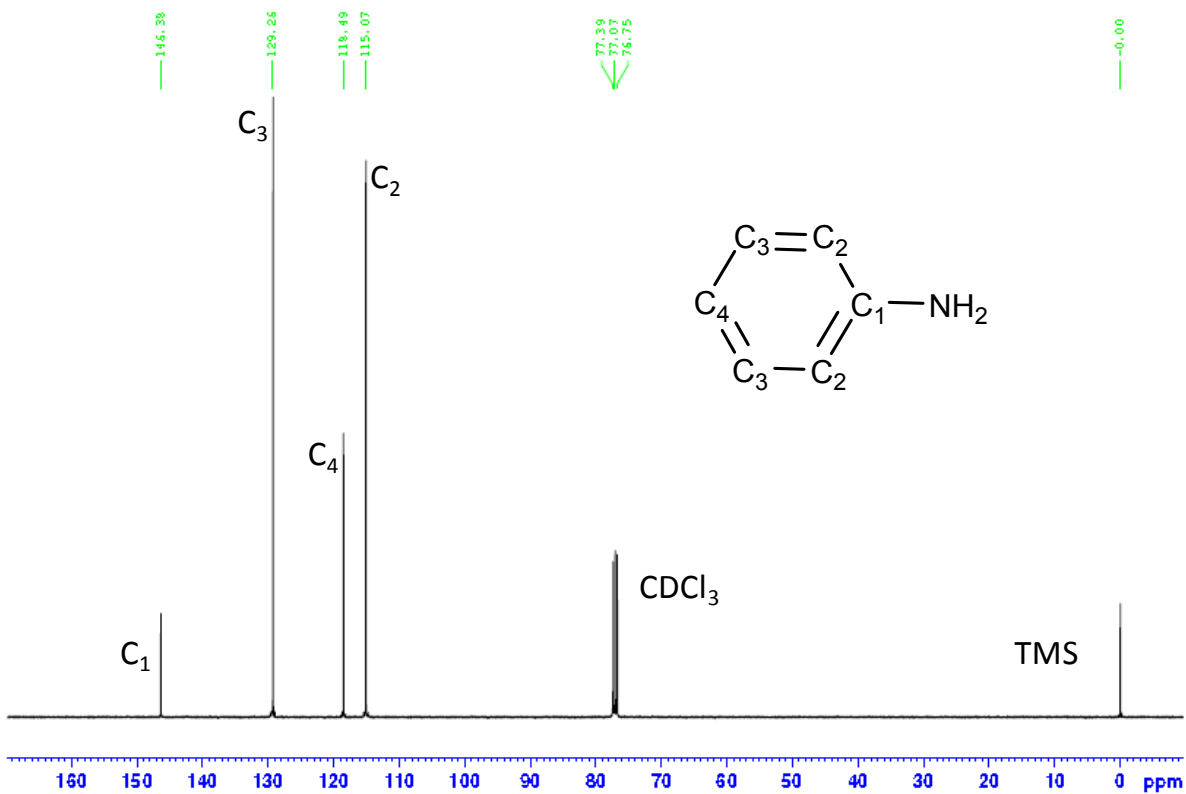
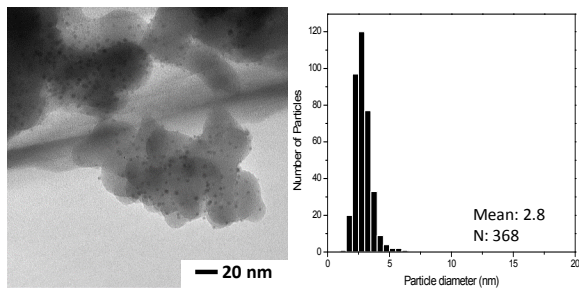
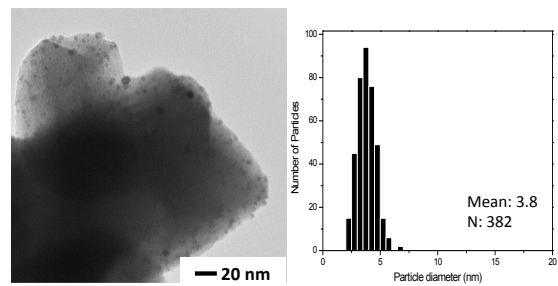


Fig. S2. $^{13}\text{C-NMR}$ of the isolated aniline.

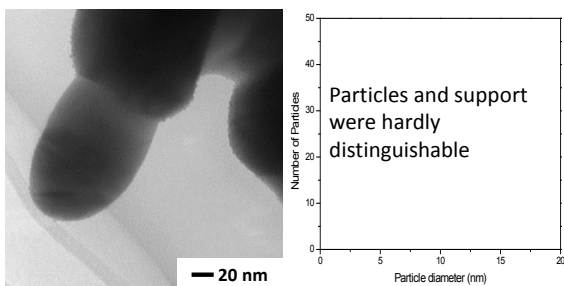
a) 2.1wt% Pd/ZSM-5



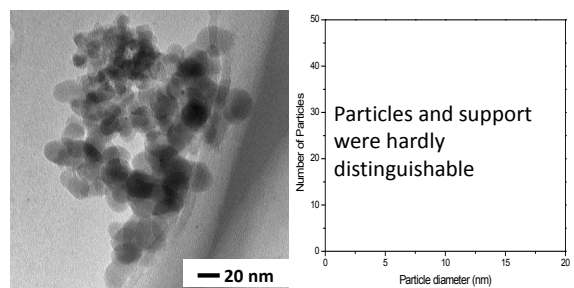
b) 2.1wt% Pd/HY zeolite



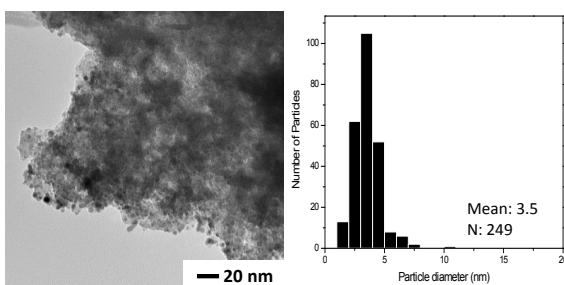
c) 2.1wt% Pd/Nb₂O₅



d) 2.1wt% Pd/ γ -Al₂O₃



e) 2.1wt% Pd/SiO₂-Al₂O₃



f) 2.1wt% Pd/SO₄²⁻/ZrO₂

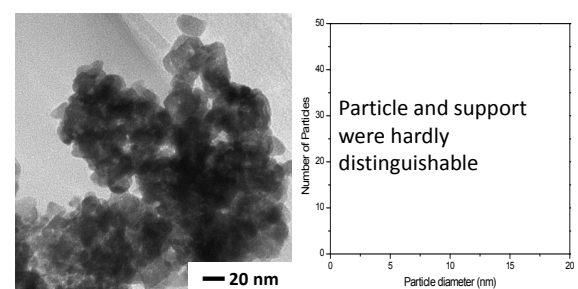


Fig. S3. TEM images and particle size distribution of the supported Pd catalysts.