

Supporting Information

Efficient Room-Temperature Hydrogenation of Nitroaromatic Compounds to Primary Amines Using Nitrogen-Doped Carbon-Supported Palladium Catalysts

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1. Characterization results

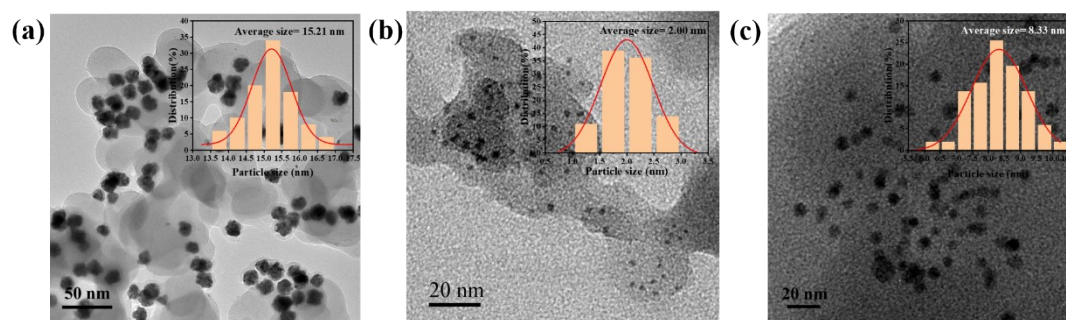


Figure S1. (a) TEM image of Pd_{2.0}/C-300, (b) TEM image of Pd_{2.0}/CN-250, and (c) TEM image of Pd_{2.0}/CN-350.

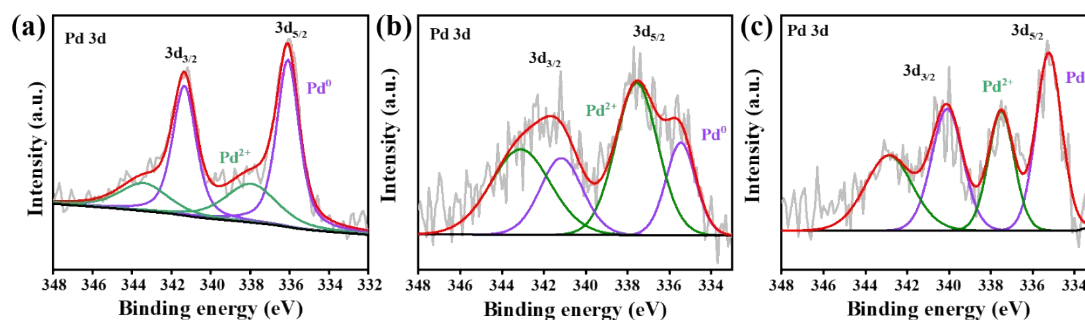


Fig. S2 XPS Pd 3d spectra of the prepared catalysts. (a) Pd_{2.0}/C-300; (b) Pd_{2.0}/CN-250; and (c) Pd_{2.0}/CN-350.

Table S1. The percentage of the palladium species in different catalysts calculated from the XPS Pd 3d spectra.

| Catalyst | Pd (0) (%) | Pd (II) (%) |
|---------------------------|------------|-------------|
| Pd _{2.0} /C-300 | 60.4 | 39.6 |
| Pd _{2.0} /CN-250 | 33.2 | 66.8 |
| Pd _{2.0} /CN-300 | 54.3 | 45.7 |
| Pd _{2.0} /CN-350 | 56.1 | 43.9 |

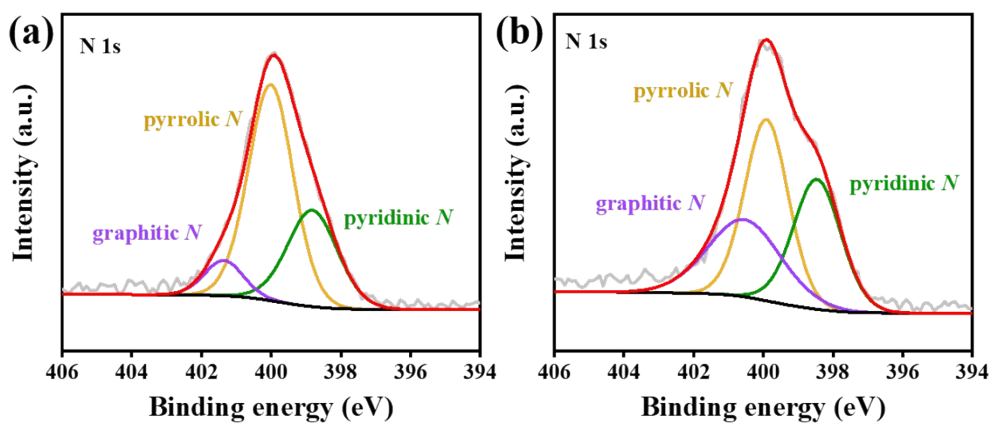


Fig. S3 XPS N 1s spectra of the prepared catalysts. (a) Pd_{2.0}/CN-250; (b) Pd_{2.0}/CN-350.

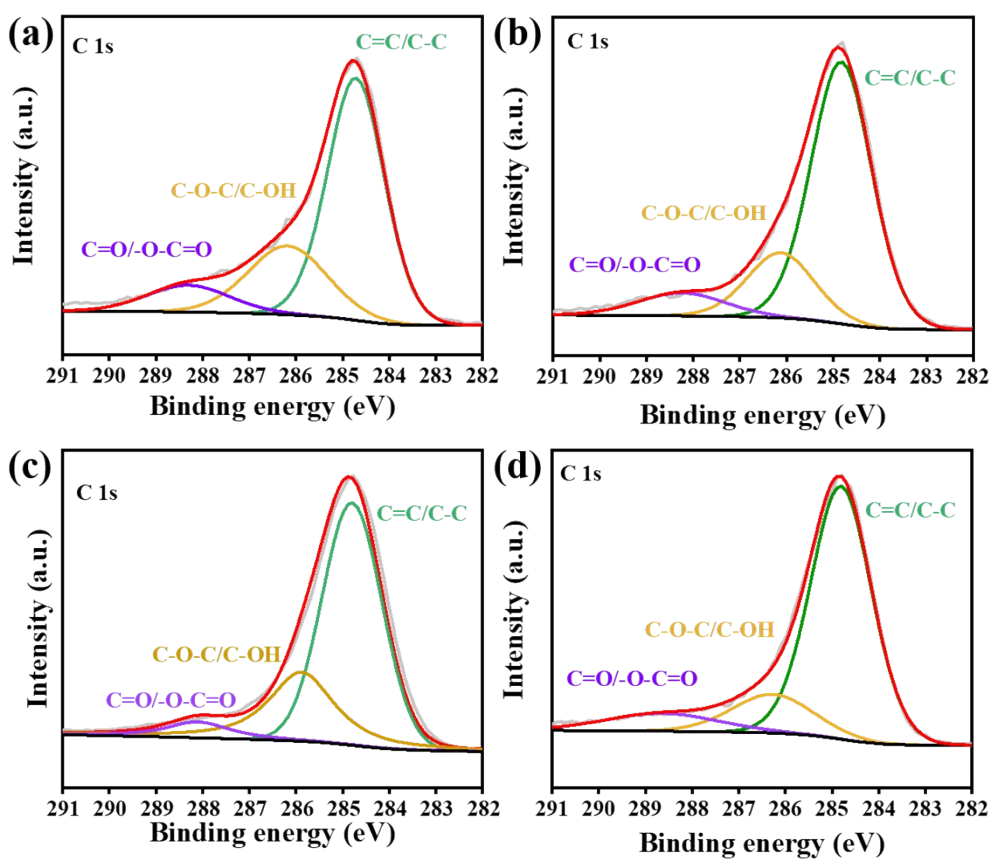


Fig. S4 XPS C 1s spectra of the as-prepared catalysts. (a) Pd_{2.0}/C-300; (b) Pd_{2.0}/CN-250; and (c) Pd_{2.0}/CN-300; (d) Pd_{2.0}/CN-350.

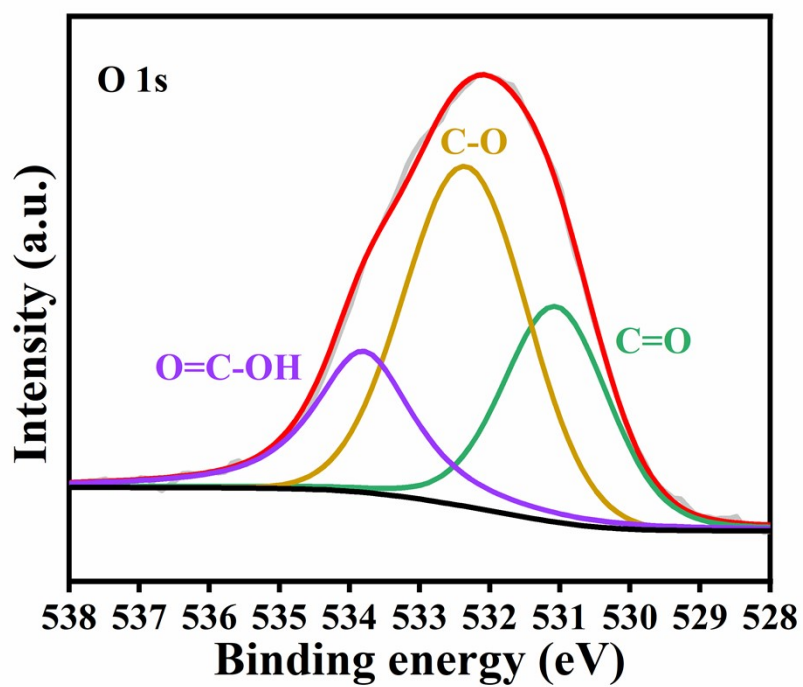
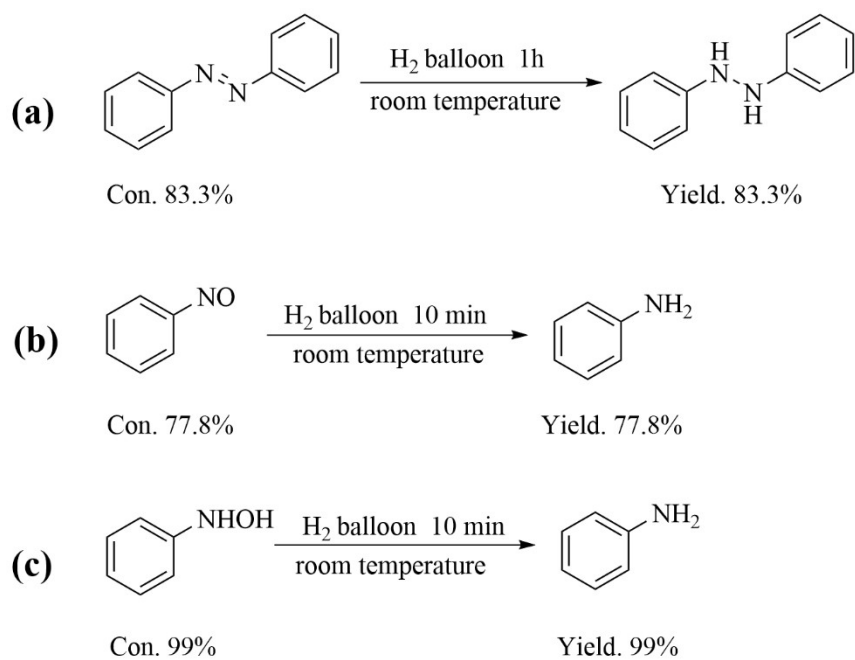


Fig. S5 The XPS O 1s spectrum of Pd_{2.0}/CN-300.

Table S2. Content of Pd element in Pd_{2.0}/CN-300 before and after cyclic reaction measured by ICP-OES.

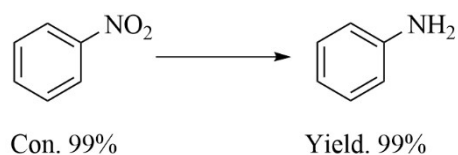
| Entry | Catalysts | Pd (%) |
|-------|---------------------------------|--------|
| 1 | Fresh Pd _{2.0} /CN-300 | 2.1 |
| 2 | Used Pd _{2.0} /CN-300 | 2.0 |

2. Control experiments



Scheme S1 Control experiments. Reaction conditions: substrate (0.5 mmol), catalyst (20 mg), ethanol (10 mL).

3. Amplification experiments



Scheme S2 Amplification experiments. Reaction conditions: nitrobenzene (5 mmol), catalyst (20 mg), H₂ balloon, ethanol (10 mL), room temperature, and 10 h.

4. Copy of GC-MS for products

