

Supporting Information for

Nitrogen doped carbon for Pd-catalyzed hydropurification of crude terephthalic acid: Roles of nitrogen species

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Synthesis of other Pd/N_AC catalysts

The N doped AC samples with different hydrothermal reaction time (2 h, 10 h and 24 h) were also synthesized by the same hydrothermal process. Then, these N doped AC supported Pd catalysts were prepared by a wetness impregnation method. The obtained Pd catalysts were denoted as Pd/N_AC-t, where t referred to the different hydrothermal reaction time (2 h, 10 h and 24 h).

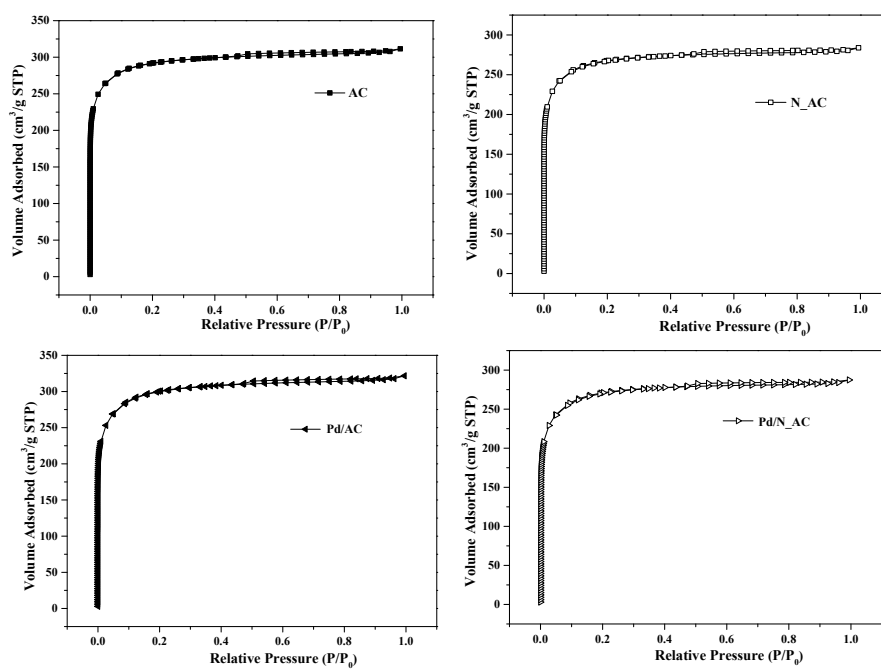


Figure S1. N₂ adsorption-desorption isotherms of AC, N_AC, Pd/AC and Pd/N_AC.

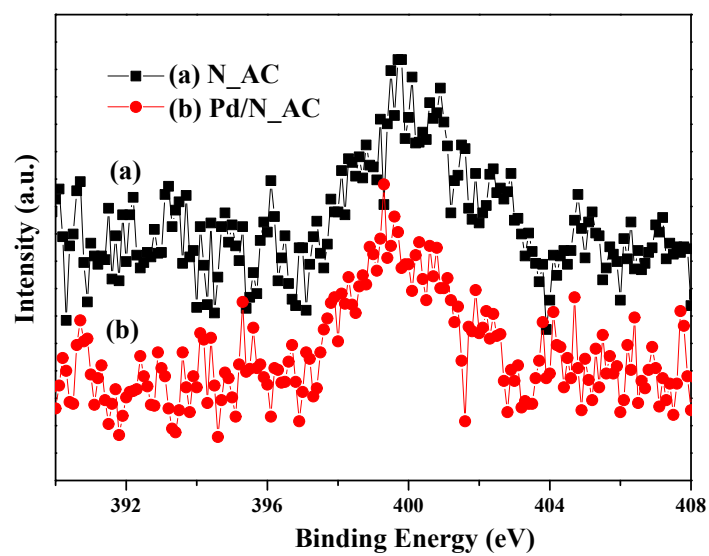


Figure S2. N1s XPS spectra of (a) N_AC and (b) Pd/N_AC.

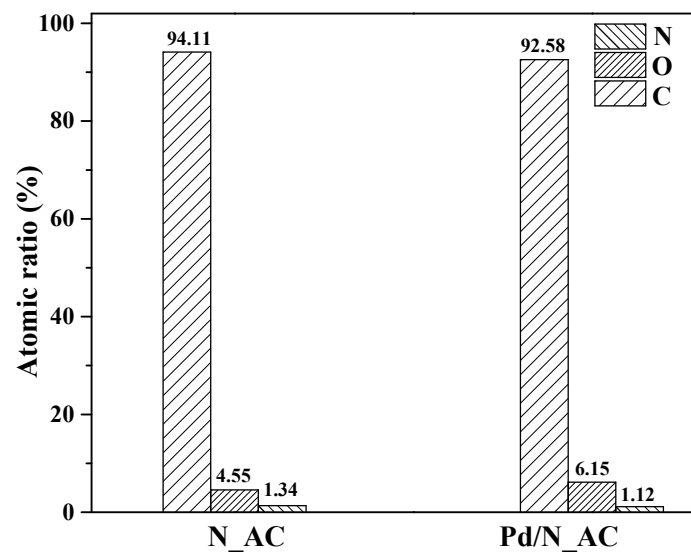


Figure S3. Total atomic concentration of N_AC and Pd/N_AC.

Table S1 Element analysis results before and after Pd loading determined by CHN

| Sample | C (wt.%) | H (wt.%) | N (wt.%) |
|---------|----------|----------|----------|
| N_AC | 77.26 | 2.30 | 0.58 |
| Pd/N_AC | 77.14 | 2.30 | 0.53 |

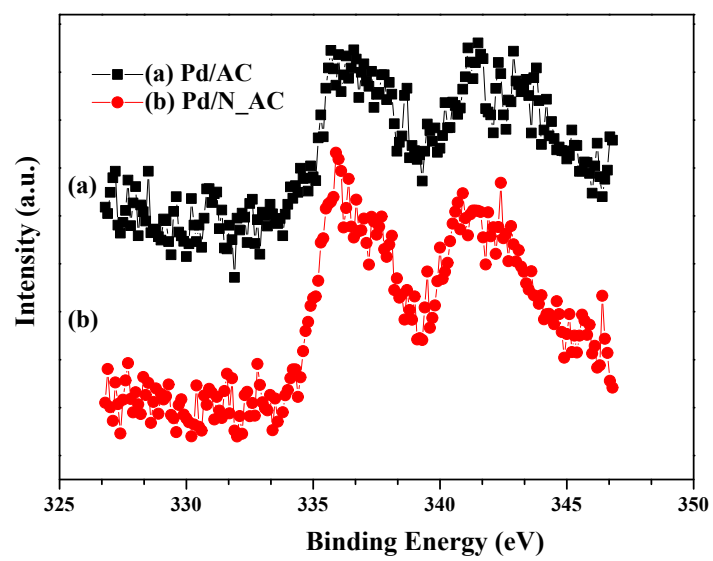


Figure S4. Pd3d XPS spectra of Pd/AC and (b) Pd/N_AC.

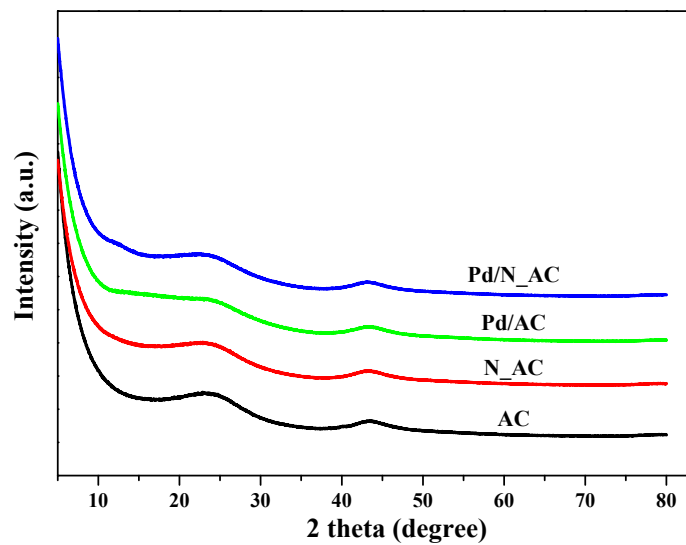


Figure S5. XRD patterns of supports and Pd catalysts.

XRD patterns in Figure S5 showed that the crystallinity and structures of AC retained after N doping and Pd loading. In addition, the absence of diffraction of Pd species implied that the Pd NPs were small or highly dispersed on supports.

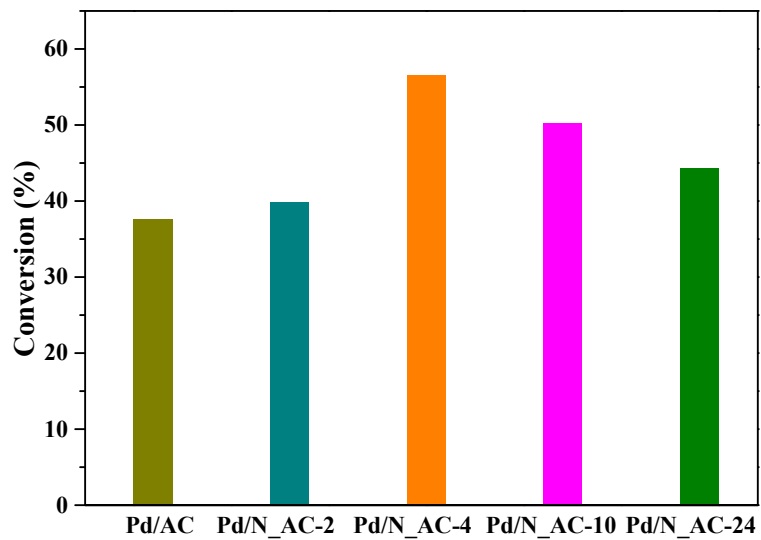


Figure S6. Catalytic activities of different N doped Pd catalysts for 4-CBA hydrogenation reaction. Reaction conditions: 4-CBA (0.15 g), 0.5% Pd catalyst (50 mg), H₂O (50 ml), H₂ (0.8 MPa), 80 °C, 1 h.