

Supplementary data

Palladium Nanocatalysts on Hydroxyapatite: Green Oxidation of Alcohols and Reduction of Nitroarenes in Water

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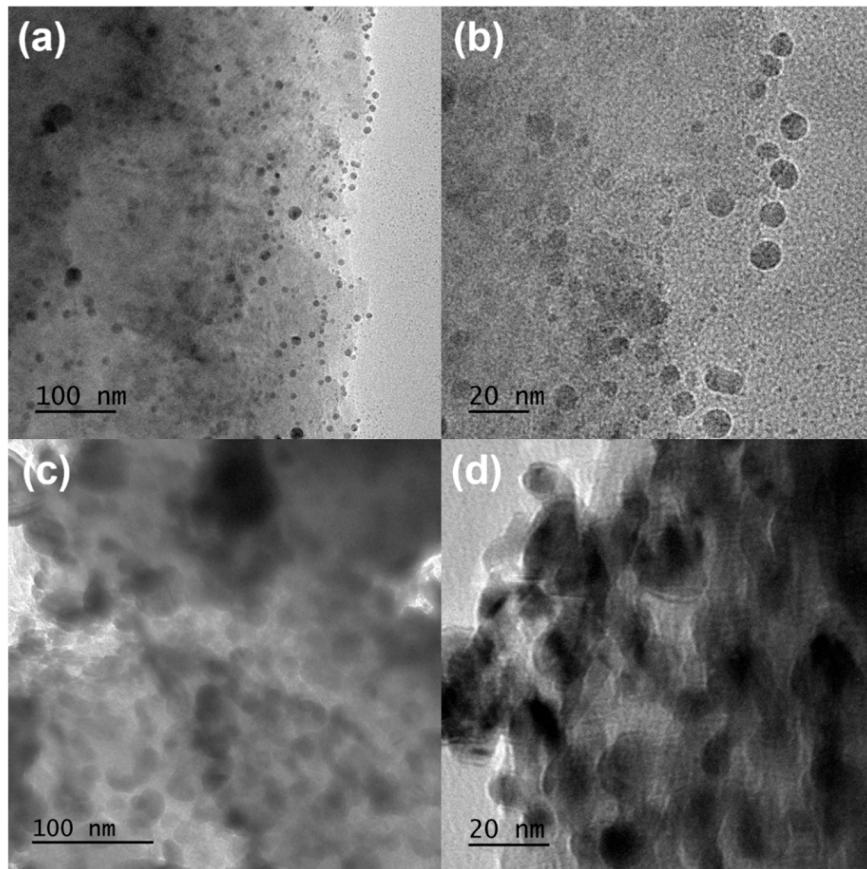


Figure S1. TEM (a) and (b) HRTEM images of HAP-Pd catalyst synthesized by green coffee utilization. TEM (c) and (d) HRTEM images of Pd NPs decorated on HAP synthesized by NaBH₄ utilization.

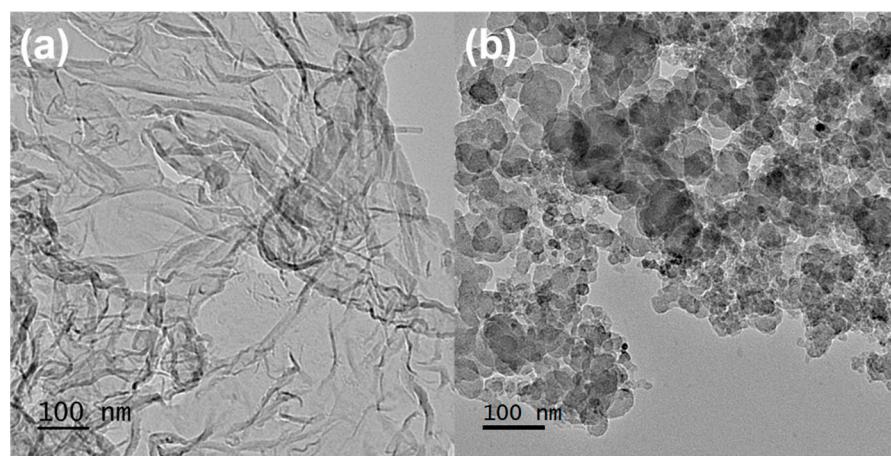
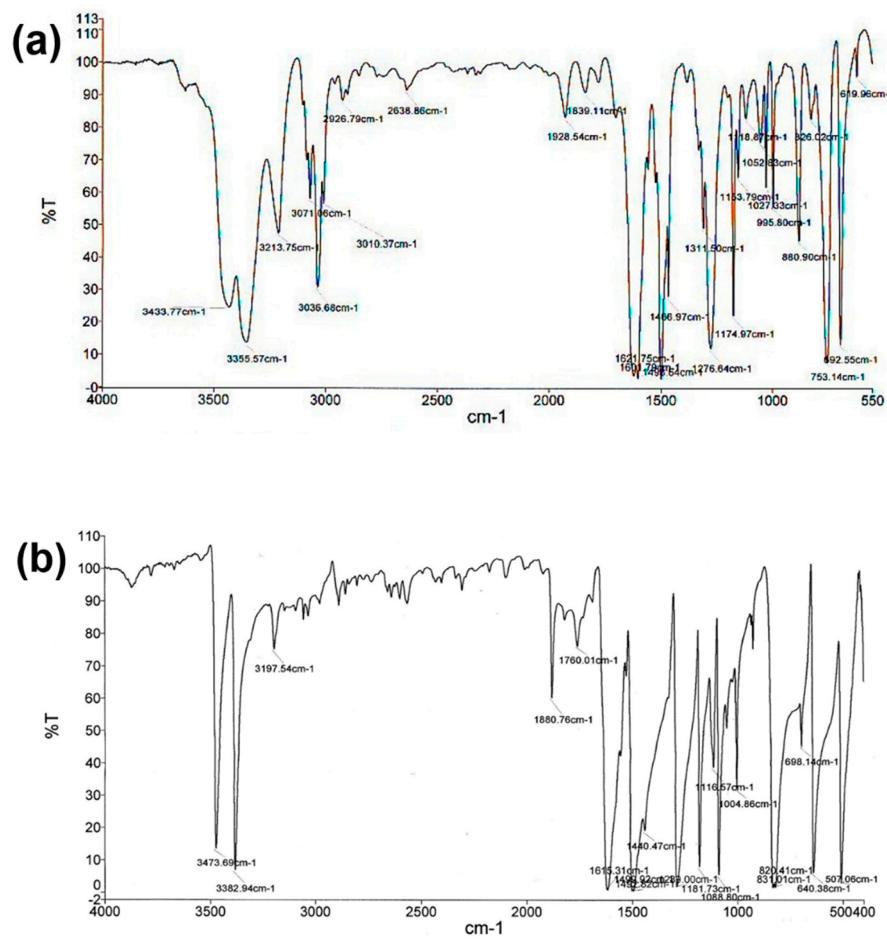


Figure S2. TEM image of (a) carbon and (b) carbon-Pd catalyst synthesized by green coffee utilization.



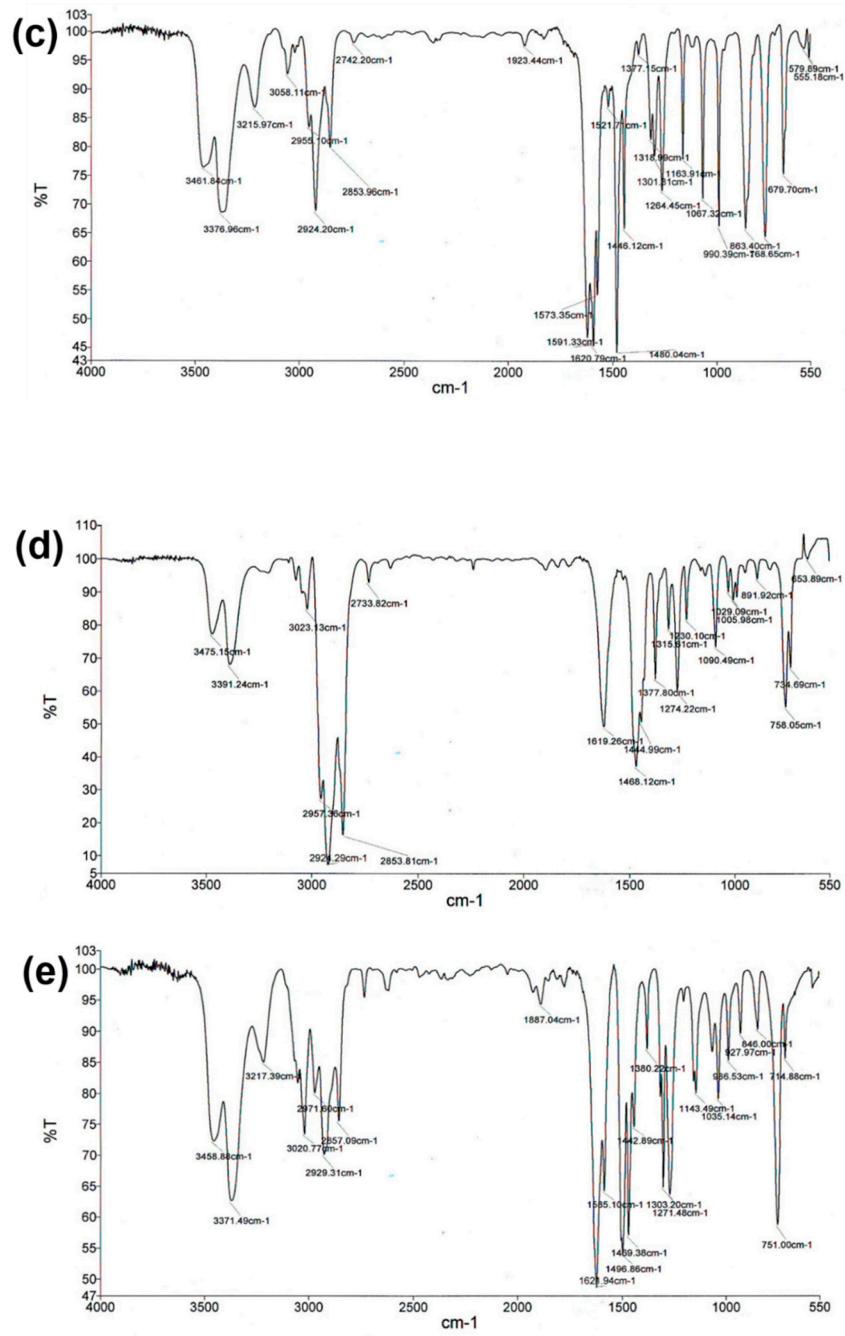
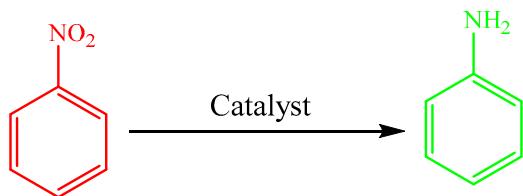


Figure S3. FT-IR spectra of (a) aniline, (b) 4-chloro aniline, (c) 4-bromo aniline, (d) 2,4-dimethyl aniline, (e) 4-methyl aniline.

Table S1. A comparison study of catalytic activity with previously reported nanocatalysts.



Entry	Catalyst (1 mol%)	Reaction conditions	Yield (%)	Ref.
1	No	Water, r.t., 2 h, NaBH4	3	This work
2	K2PdCl4	Water, r.t., 2 h, NaBH4	8	This work
3	HAP-Pd catalyst	Water, r.t., 2 h, NaBH4	98	This work
4	Magnetic hollow Rh	EtOH, 80 °C, 2.5 h, NH2NH2	99	1
5	Magnetic carbon Pt	EtOH, 80 °C, 3 h, NH2NH2	99	2
6	Core-shell Pd	EtOH, 80 °C, 4 h, NH2NH2	99	3
7	FeOx	EtOH, 85 °C, 7 h, NH2NH2	96	4

References

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containing MOFs for efficient hydrogenation of nitroarenes. *Mol. Catal.* **2019**, *477*, 110544.