Supporting Information

Selective Hydrogenolysis of Aryl Ethers over Nitrogen-Doped Porous Carbon Supported Ni–CeO_2 Catalyst at Low Temperature

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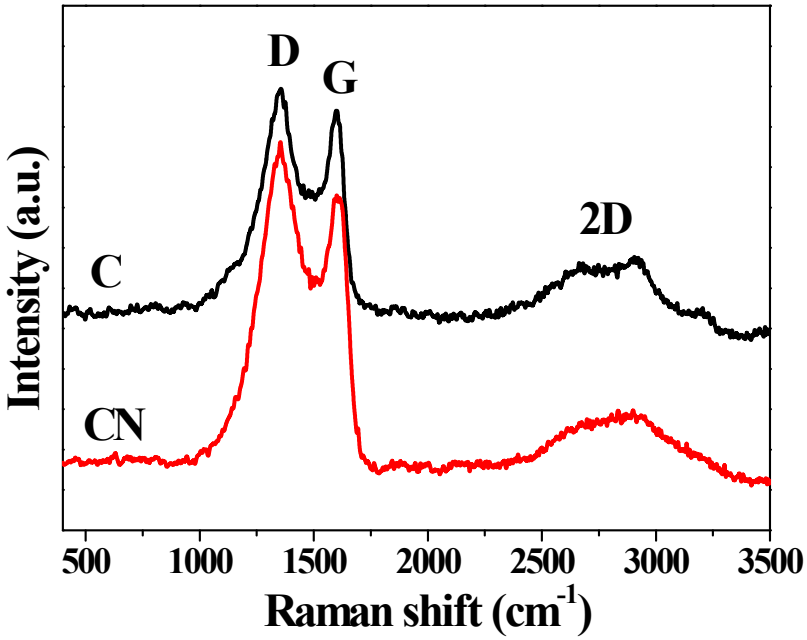

Fig. S1 The Raman spectra (a) C, (b) CN

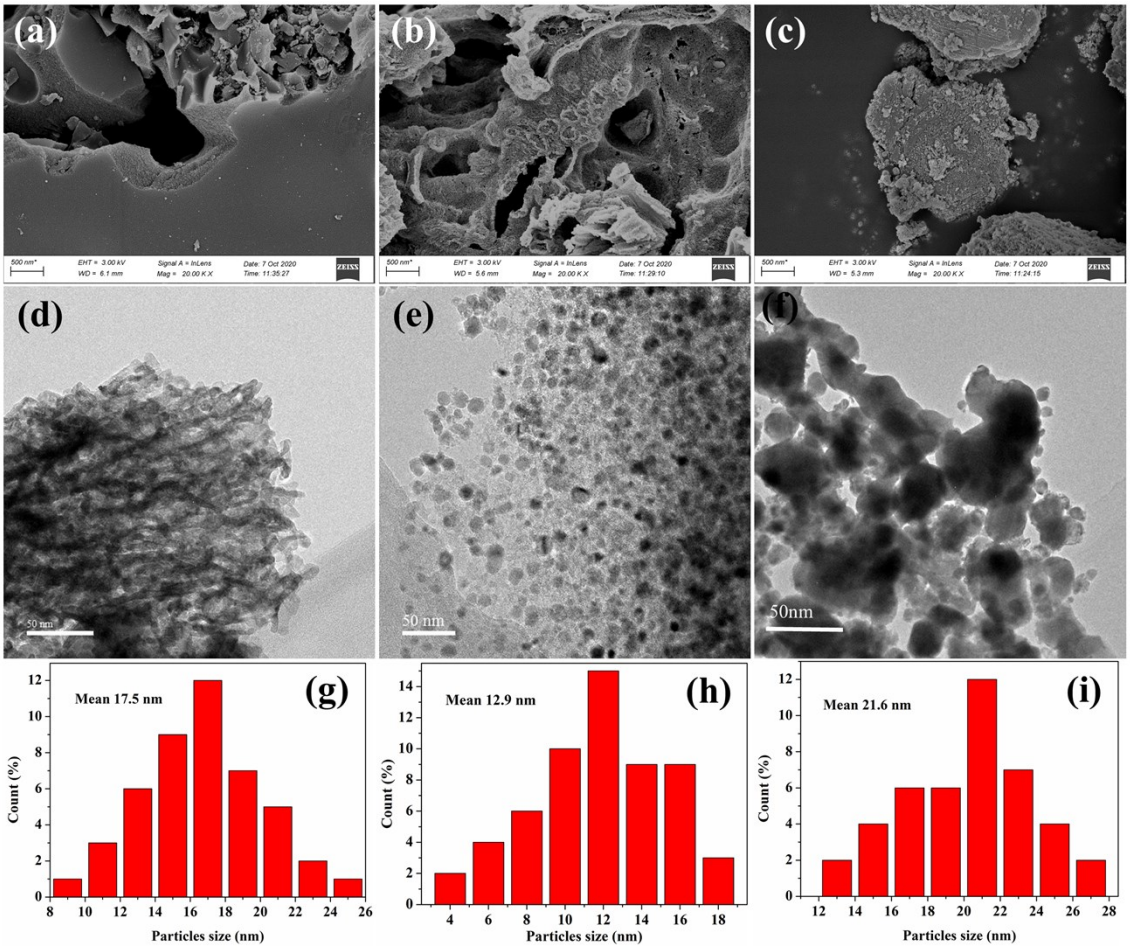

Fig. S2 SEM/TEM images and Particle size distribution of catalysts (a, d, g) Ni/C, (b, e, h) Ni/CN, (c, f, i) Ni-CeO_2/CN.

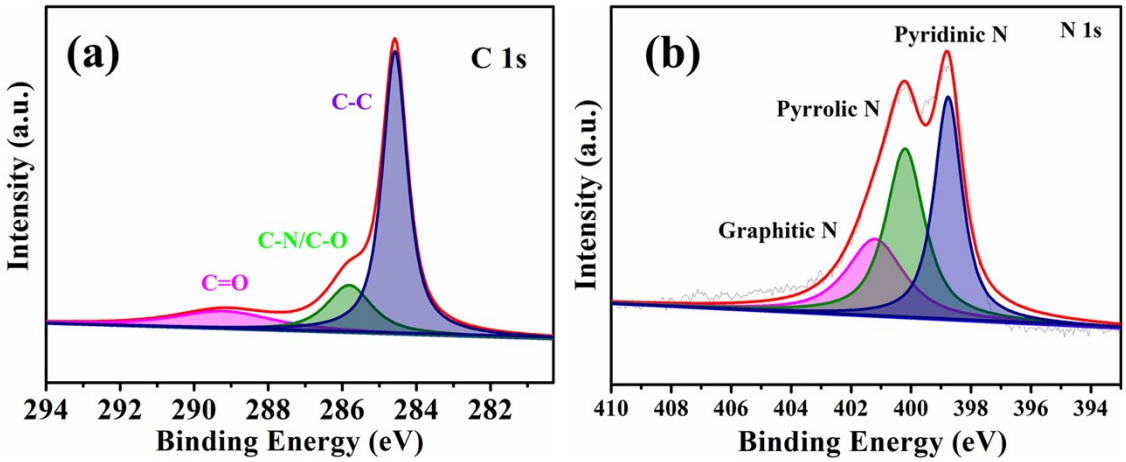

Fig. S3 XPS spectra of Ni-CeO_2/CN catalyst (a) C1 spectra and (b) N1 spectra.

Fig. S4 Contrast images of Ni-CeO_2/CN catalyst before and after magnetic separation.

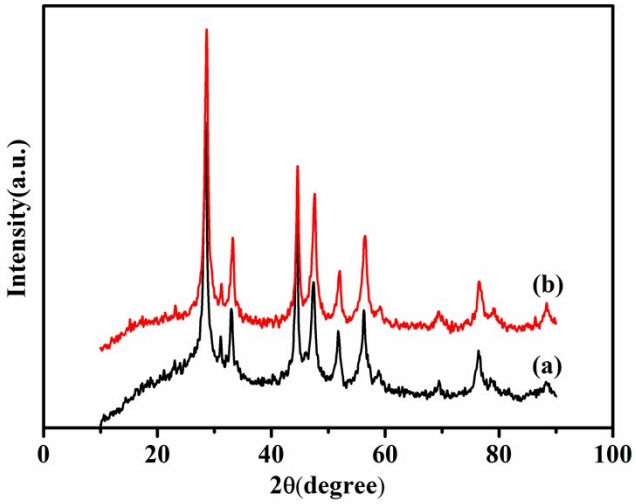

Fig. S5 XRD patterns of (a) fresh and (b) recycled Ni-CeO_2/CN catalyst.

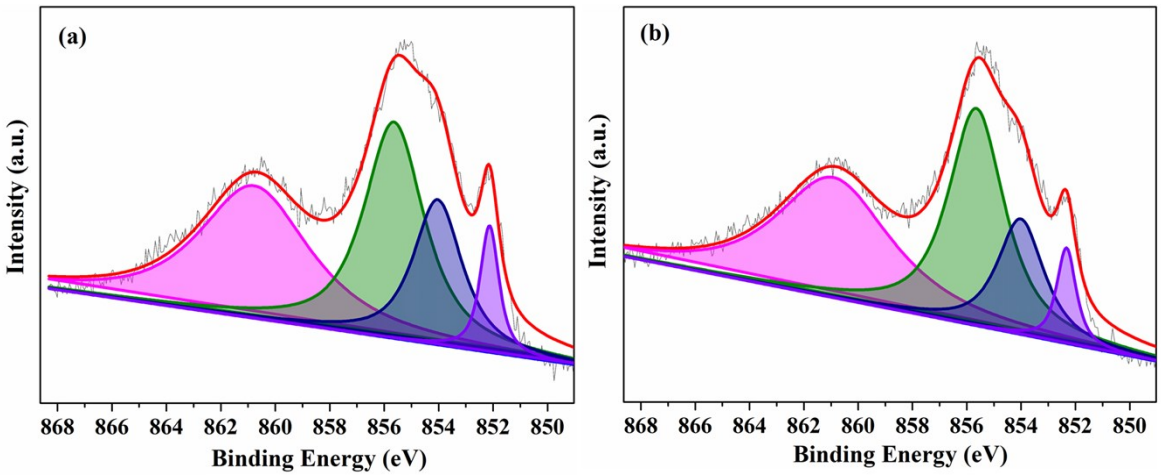

Fig. S6 XPS Ni $2p_{3/2}$ spectra (a) fresh and (b) recycled Ni-CeO_2/CN catalyst.

Table S1 Textural properties of supporters

sample	S_{BET} (m^2 g^{-1})	pore volume (cm^3 g^{-1})	average pore diameter (nm)
C	238.05	0.25	6.67
CN	872.57	0.38	5.18
CeO	88.99	0.26	8.91
CeO_2/CN	668.52	0.29	4.85

Table S2 Quantitative analyses of the fitted Ce 3d core level XPS peaks.

sample		Ce^{4+} 3d					
Ni-CeO_2/CN	Peak BE (eV)	916.7	907.3	901.3	898.2	887.5	882.2
	Attribution	$3d_{3/2}$	$3d_{3/2}$	$3d_{3/2}$	$3d_{5/2}$	$3d_{5/2}$	$3d_{5/2}$
	area	27257	37328	15431	30650	31268	32970
Ni/CeO_2	Peak BE (eV)	916.7	907.3	901.3	898.2	887.5	882.2
	Attribution	$3d_{3/2}$	$3d_{3/2}$	$3d_{3/2}$	$3d_{5/2}$	$3d_{5/2}$	$3d_{5/2}$
	area	255814	220084	90169	254131	148657	197322
sample		Ce^{3+} 3d				Ce^{3+}/ (Ce^{3+}+Ce^{4+})	
Ni-CeO_2/CN	Peak BE (eV)	903.7	900.7	885.2	881.6		
	Attribution	$3d_{3/2}$	$3d_{3/2}$	$3d_{5/2}$	$3d_{5/2}$	0.42	
	area	27535	27670	46043	23724		
Ni/CeO_2	Peak BE (eV)	903.7	900.7	885.2	881.6		
	Attribution	$3d_{3/2}$	$3d_{3/2}$	$3d_{5/2}$	$3d_{5/2}$	0.31	
	area	81029	155463	244465	53924		

Table S3 The analysis of Ni speciation and content of fresh and recycled Ni-CeO_2/CN catalyst.

Catalysts	Atom content (%)[a]		Total Ni (%)[b]
	Ni^0	Ni^{2+}	
Fresh Ni-CeO2/CN	7.6	92.4	20.45
recycled Ni-CeO_2/CN	7.4	92.6	18.36

[a] Determined by XPS analysis.

[b] Determined by ICP-OES.