Supplementary Information (SI) for Physical Chemistry Chemical Physics.

Cooperation between holey N-doped carbon and Ni nanoparticles as efficient electrocatalyst for hydrogen evolution reaction

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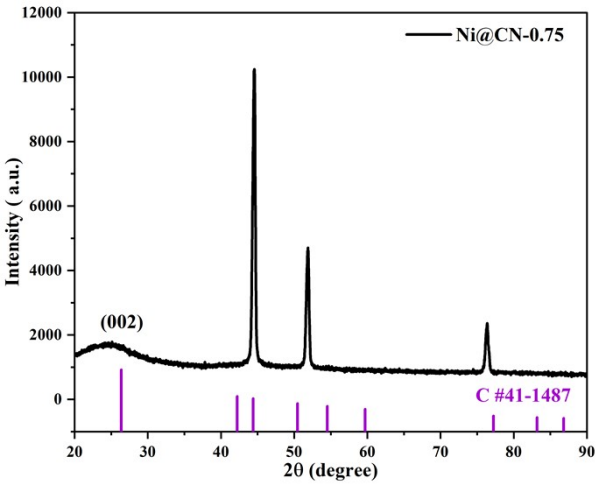

Figure S1. XRD pattern of Ni@CN-0.75.

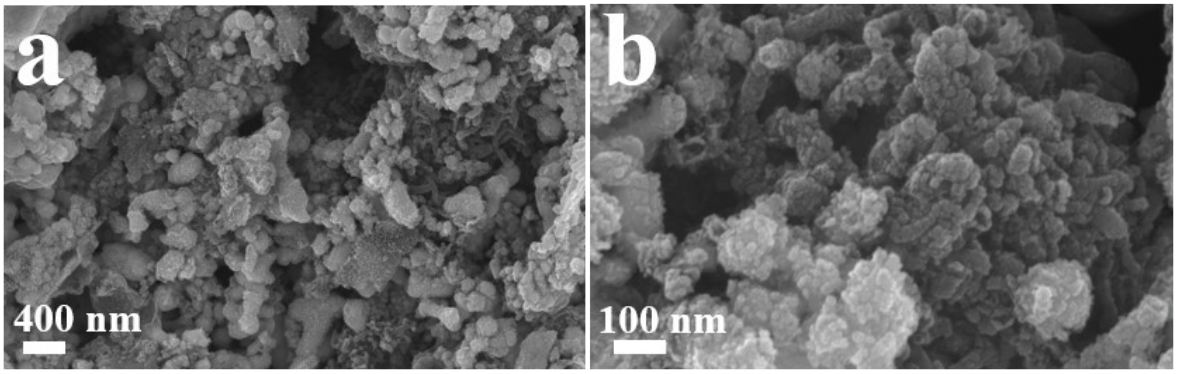

Figure S2. SEM images with Ni (a-b).

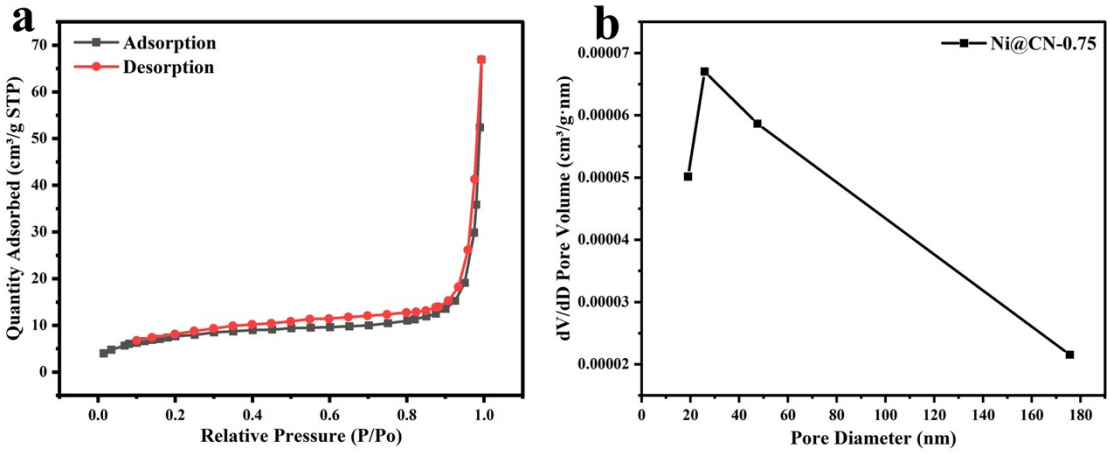

Figure S3. N_2 adsorption/desorption isotherms of Ni@CN(a). BJH pore size distribution curves of Ni@CN(b).

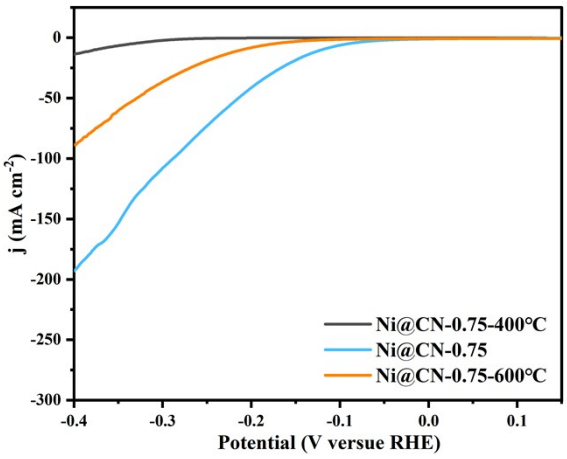

Figure S4. LSV curves of Ni@CN-0.75 with different calcination temperature.

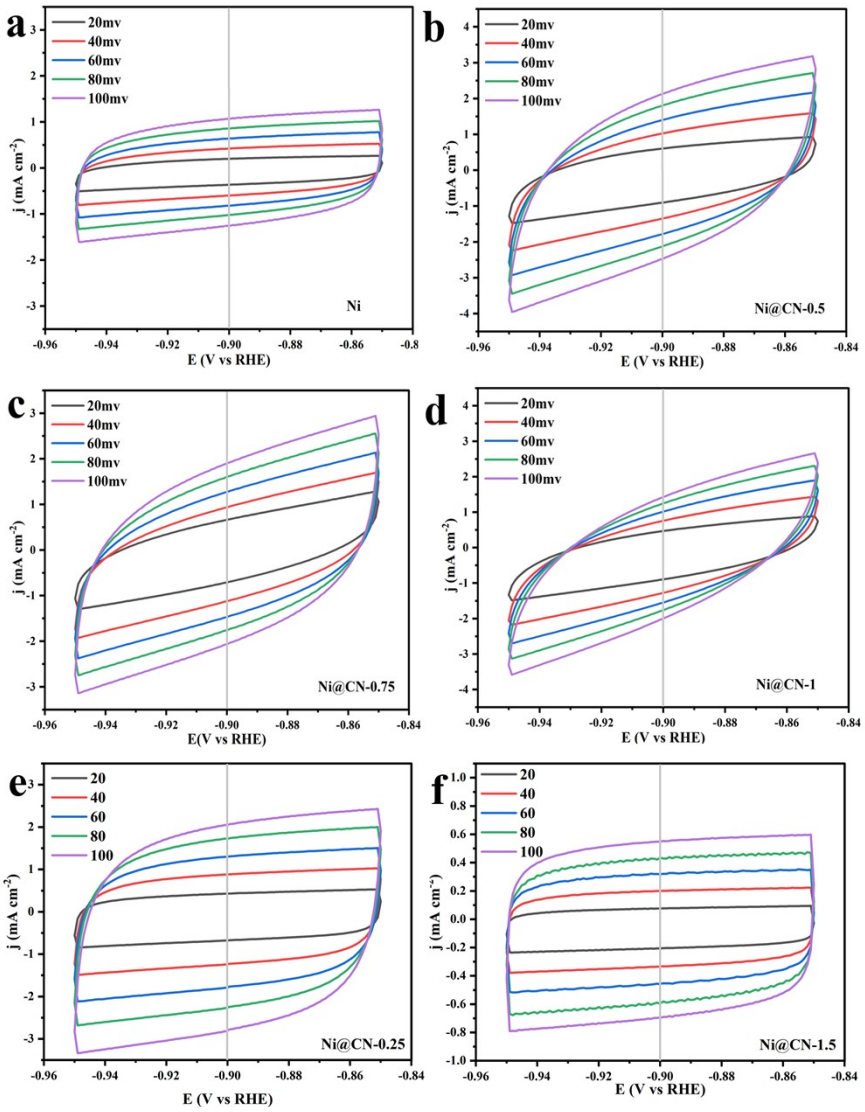

Figure S5. CV curves of Ni (a), Ni@CN-0.5(b), Ni@CN-0.75(c) and Ni@CN-1 (d) in 1.0 M

KOH solution with various scan rates.

Table S1. Comparison of hydrogen evolution performance with nickel-based catalyst.

Catalyst	Substrate	Electrolyte	η_{10} (mV)	Tafel Slope (mV dec^{-1})	Ref.
Ni@NC-800	GC	1.0 M KOH	205	160	[1]
Ni/NC-0.35	GC	1.0 M KOH	133	109	[2]
NV−Ni/CP	GC	1.0 M KOH	95	140	[3]
Ni_2P/NC-60	GC	1.0 M KOH	108	67.3	[4]
Ni/C-2	GC	1.0 M KOH	94	52	[5]
NNG 12 (12 Wt% Ni)	GC	1.0 M KOH	280	-	[6]
Mo_2C/Ni-CN	GC	1.0 M KOH	170	64	[7]
Ni@CNTs-650°	GC	1.0 M KOH	266	102	[8]
Ni_3S_2/VS_2	GC	1.0 M KOH	151	59.9	[9]
Ni@CN-0.75	**GC**	**1.0 M KOH**	**121**	**121.4**	**This work**

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