Ni-NiCr Nanoparticles Incorporated Carbon Nanofibers as Robust Electrocatalysts for Efficient Glycerol Oxidation

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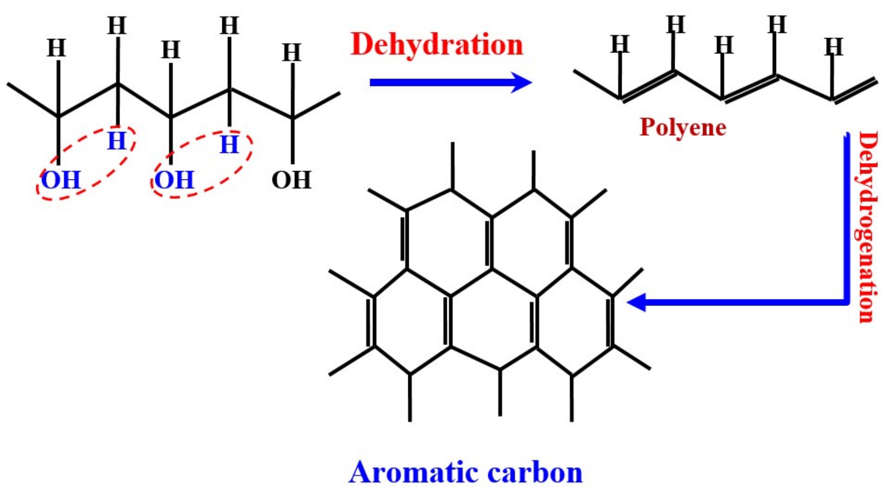

Figure S01 Schematic diagram for the expected optimum destructive of the PVA

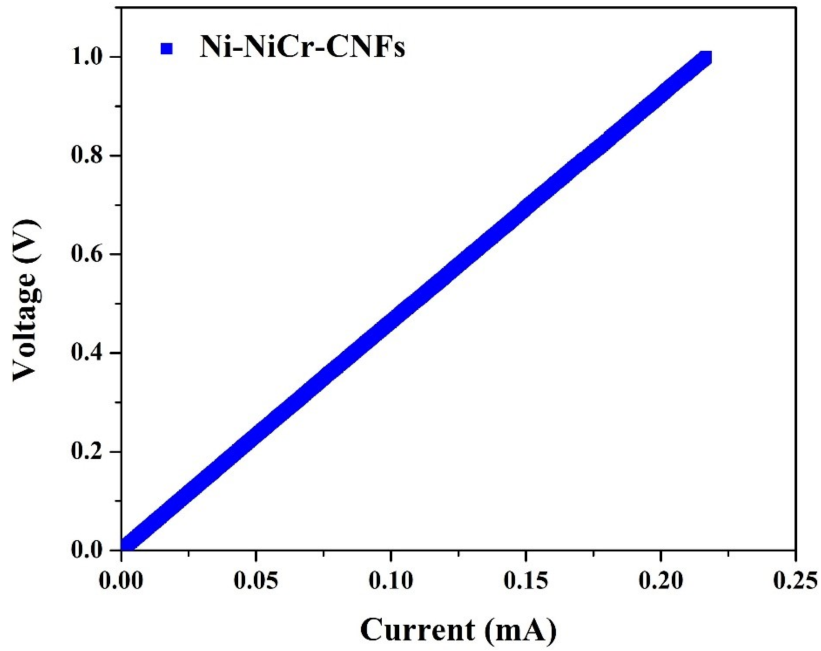

Fig. S02 Voltage–current (V–I) curve of the introduced Ni-NiCr-CNFs measured using a linear sweep method in a two-electrode configuration. The calculated electrical conductivity from the slope of the curve is approximately 0.268 S/m, indicating good electronic conductivity suitable for electrocatalytic applications.

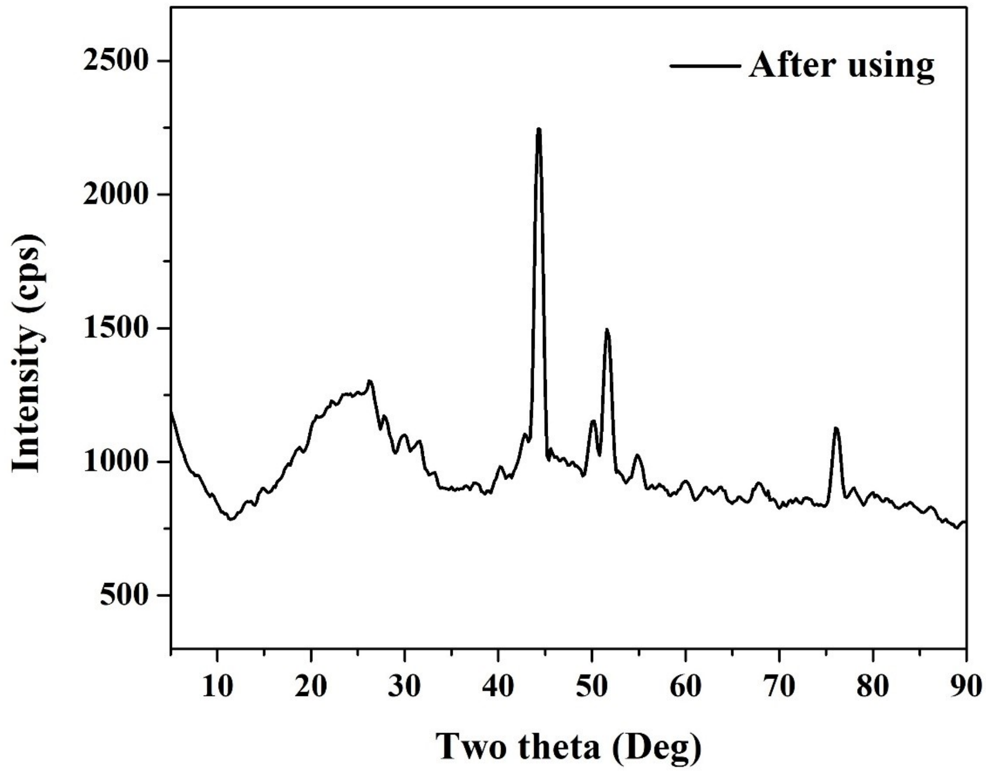

Fig. S03 X-ray diffraction (XRD) pattern of the Ni-NiCr-CNFs (15 % sample) catalyst after electrochemical glycerol oxidation testing. The pattern shows the characteristic peaks of the Ni-NiCr alloy phase and graphitic carbon matrix, with no observable formation of new crystalline phases or significant peak broadening, indicating good structural and phase stability of the catalyst after prolonged electrochemical operation.

Table S01 Electrocatalytic activity of some functional electrocatalysts toward glycerol electrooxidation.

	Electrocatalyst	Electrolyte	Current density (mA/cm^2)	Ref.
	Pd/carbon/GCE	1 M KOH/ 0.1 M Gly	25	[1]
	Pd nanocubes	0.1 M KOH/ 0.2 M Gly	2.5	[2]
	Pd/CPAA	1 M KOH/ 1 M Gly	70	[3]
	Pd/carbon black/Gr	1 M KOH/ 1 M Gly	18	[4]
	Pd/C	1 M NaOH/ 1 M Gly	2.49	[5]
	Pd_4Bi	1 M KOH/ 0.1 M Gly	90.3	[6]
	Pd/CNT-FLG/GCE	2 M KOH/ 10 wt% Gly	44.2-55.2	[7]
	Pd/MWCNT/GCE	2 M KOH/ 5 wt% Gly	53.7	[8]
	Pd/NPSS	1 M KOH/ 5 wt% Gly	78	[9]
	Pd/CCE	0.3 M KOH/ 0.5 M Gly	51.8	[10]
	PdRh/ED	0.1 M KOH/ 0.1 M Gly	1.16	[11]
	Co@Pt/C	0.5 M KOH/ 1.0 M Gly	3.6	[12]
	Ni@Pt/C	0.5 M KOH/ 1.0 M Gly	2.2	[12]
	Pd-Pt/C	1.0 M KOH/ 1.0 M Gly	24.5	[13]
	AuAg Nanocages of GDE	0.5 M KOH/ 0.1 M Gly	290	[14]
	Spinel-Type oxides	1.0 M KOH/ 0.1 M Gly	10	[15]
	CuNiSnP/Carbon	0.5 M KOH/ 0.5 M Gly	6.5	[16]
	NiOOH	0.1 M KOH/ 0.1 M Gly	5	[17]
	PdNi/C	1.0 M KOH/ 0.5 M Gly	1.5	[18]
	PtBi/C	0.5 M H_2SO_4/ 0.1 M Gly	2.3	[19]
	AuPd/C	0.5 M KOH/ 0.5 M Gly	3.8	[20]
	NiCr-CNFs	1.0 M KOH/ 0.5 M Gly	102.7	**This study**

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