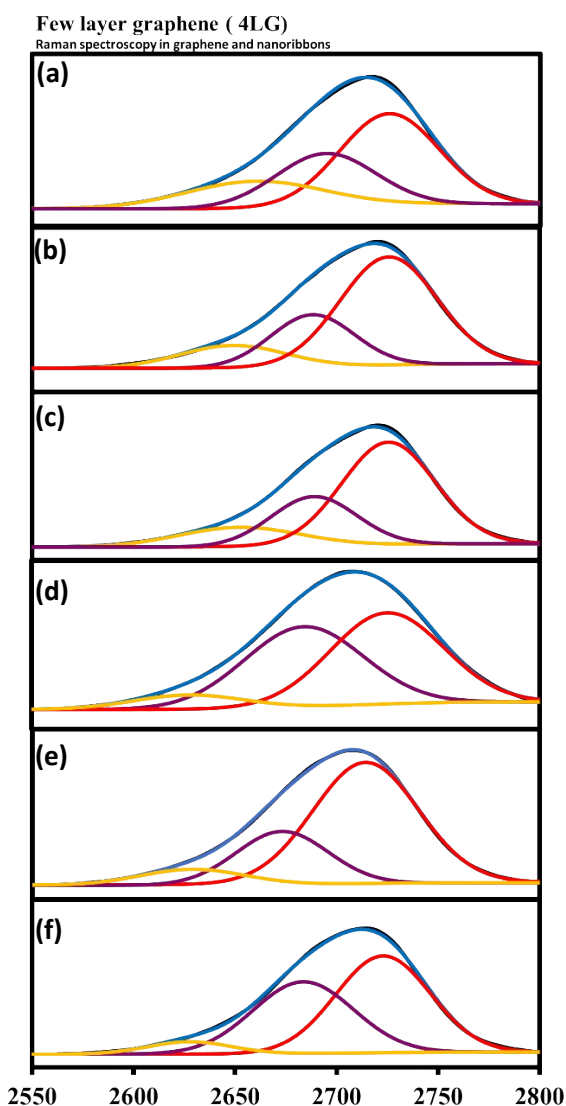


Supporting Information

Oxidative chemical vapor deposition of graphene oxide carbocatalyst on 3D nickel foam as a collaborative electrocatalyst towards hydrogen evolution reaction in acidic electrolyte

Sangchai Sarawutanukul,^a Nutthaphon Phattharasupakun,^a Juthaporn Wutthiprom,^a and Montree Sawangphruk^{*a}

^aDepartment of Chemical and Biomolecular Engineering, School of Energy Science and Engineering, Vidyasirimedhi Institute of Science, and Technology, Rayong 21210, Thailand.



1. Raman spectroscopy

Fig. S1 Deconvoluted 2D Raman spectra of samples G to G-6 as shown in (a) - (f), respectively.

2. XPS spectra of G-G6 samples

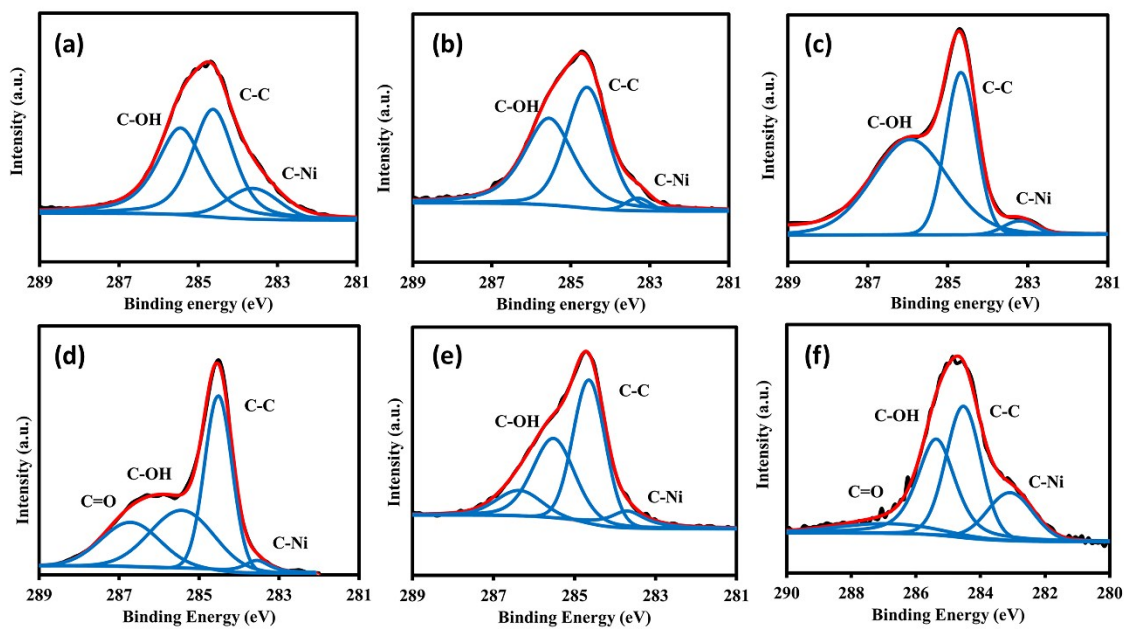


Fig. S2 C1s XPS survey spectra of the samples G to G-6 as shown in (a) - (f), respectively

3. Evaluation of band gap energy

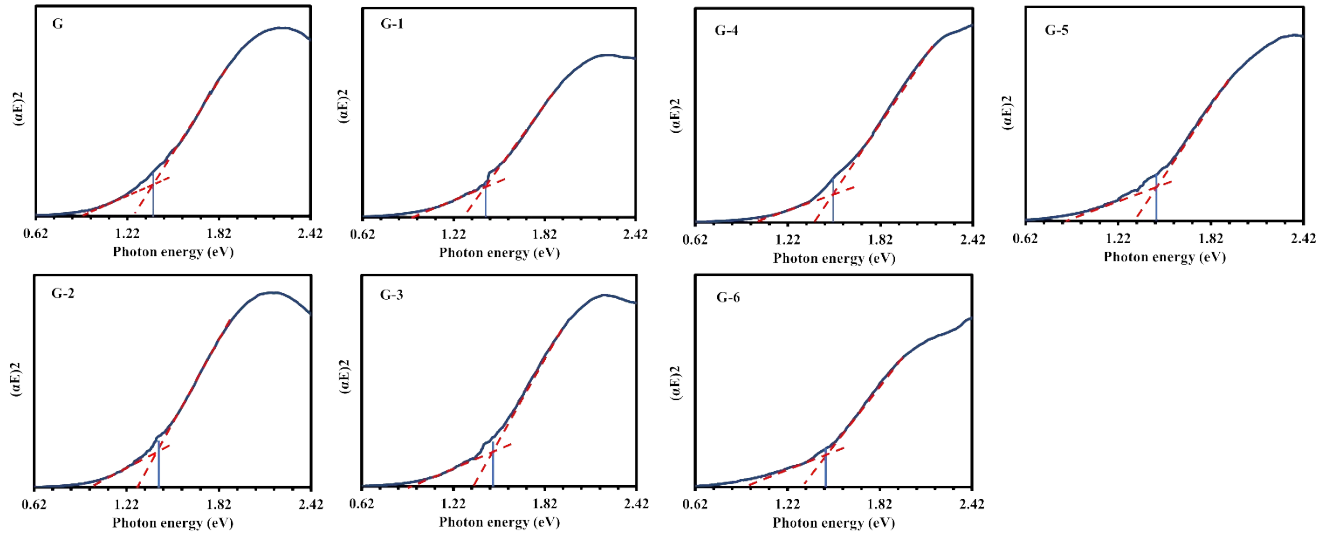


Fig. S3. Tauc plot analysis for the direct allowed transition from UV-Vis diffuse reflectance for the samples G to G-6 indicating a direct band gap transition from 1.37 eV up to 1.52 eV.

4. FESEM images of G-4 electrode and digital photograph of electrolyte after stability test

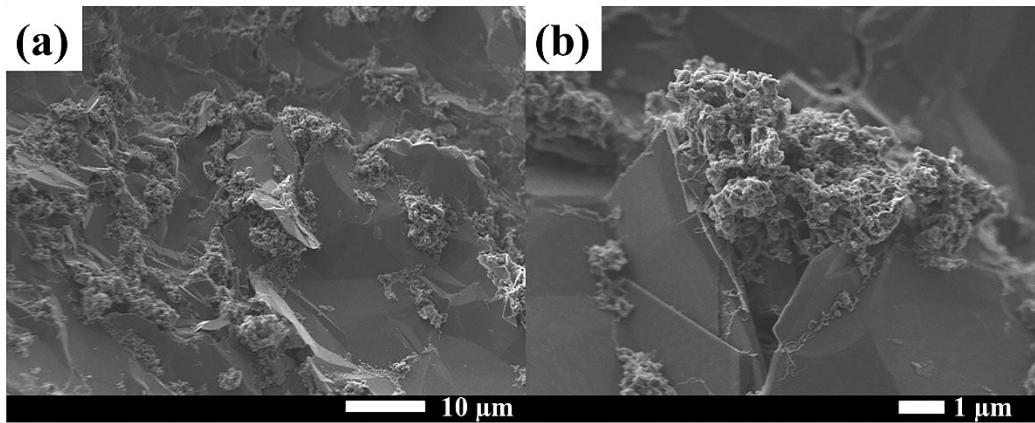


Fig. S4. FE-SEM images of the as-prepared G-4 sample after stability test.



Fig. S5. Digital photograph of electrolyte after stability test of Ni foam (left) and G-4@Ni foam (Right).

Table S1. The comparison of HER performance between the oxidative graphene@Ni electrode with other electrodes in 0.5 M H₂SO₄.

Electrodes	Overpotential (mV, 10 mA cm ⁻²)	Tafel slope (mV dec ⁻¹)	Ref
Full-activation Ni foam	210	100.6	1
MoS _x grown on graphene-protected 3D Ni foam	151	42	2
Mo ₂ C nanoparticle on RGO hybrid	130	57.3	3
WS ₂ nanolayer heteroatom-doped graphene film	125	-	4
CoSe ₂ nanoparticles grown on carbon fiber paper	137	-	5
Oxidative graphene on nickel foam	137.0	54.4	This work

Table S2. The weight of the electrode before and after hydrogen evolution tested.

Weight(mg)	NiF	G	G-1	G-2	G-3	G-4	G-5	G-6
Before	59.92	69.19	63.03	69.16	72.74	70.49	67.23	69.37
After	16.19	62.61	61.61	67.87	71.50	69.62	65.97	68.22
	-43.73	-1.13	-1.42	-1.29	-1.24	-0.87	-1.26	-1.55

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