

## Supplementary Materials

# Nitrogen Functionalization of CVD Grown Three-Dimensional Graphene Foam for Hydrogen Evolution Reactions in Alkaline Media

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**Table S1.** C1s peak position and content (at %) for every carbon element determined from XPS measurements.

Sp <sup>2</sup> hybridization characteristic	Position (eV)	-	-	-	-	290.41	290.22
	Content (at %)	-	-	-	-	13.6	18.4
O-C=O	Position (eV)	-	-	-	-	288.76	288.39
	Content (at %)	4.2	4.1	2.7	1.5	11.2	14.7
C=O	Position (eV)	286.05	286.23	286.61	286.77	286.95	286.81
	Content (at %)	5.1	6.6	4.7	3.9	13.2	15.9
C-O	Content (at %)	5.1	6.6	4.7	3.9	13.2	15.9

Sample ID	C=C sp <sup>2</sup>		C-C sp <sup>3</sup>	
	Position (eV)	Content (at %)	Position (eV)	Content (at %)
GrFoam	283.88	86.7	284.80	4
GrFoam1N	283.90	85.5	284.81	3.7
GrFoam2N	283.91	82.3	284.89	10.4
GrFoam3N	283.91	84	284.97	10.7
GrFoamPt	284.13	53.7	285.04	8.2
GrFoam1N Pt	284.15	43.4	285.10	7.6

**Table S2.** N1s peak position and content (at %) for every nitrogen element determined from XPS measurements.

Pyrrolic N		Graphitic N		Pyridinic oxide N	
Position (eV)	Content (at %)	Position (eV)	Content (at %)	Position (eV)	Content (at %)
-	-	404.85	15.7	-	-
399.69	51.2	402.03	7.8	-	-
400.12	52.4	401.87	13.1	-	-
399.51	40.5	402.39	9.6	406.27	11.00

Sample ID	Pyridinic N	
	Position (eV)	Content (at %)
GrFoam1N	399.74	<b>84.3</b>
GrFoam2N	398.30	41.4
GrFoam3N	399.18	<b>34.5</b>
GrFoam1NPt	<b>398.03</b>	<b>39.00</b>

**Table S3.** Pt4f peak position and content (at %) for every platinum element determined from XPS measurements.

$\text{Pt}^{2+}(4f^{7/2})$	$\text{Pt}^{4+}(4f^{7/2})$		$\text{Pt}^0(4f^{5/2})$		$\text{Pt}^{2+}(4f^{5/2})$		$\text{Pt}^{4+}(4f^{5/2})$	
	Content (at %)	Position (eV)	Content (at %)	Position (eV)	Content (at %)	Position (eV)	Content (at %)	Position (eV)
-	-	-	-	74.05	-	-	-	-
16.4	74.13	74.44	6.1	74.44	-	76.03	-	77.23

Sample ID	Pt <sup>0</sup> (4f <sup>7/2</sup> )		
	Position (eV)	Content (at %)	Position (eV)
GrFoamPt	70.75	100	-
GrFoam1NPt	71.16	77.5	72.70