Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Hierarchical ultrathin defect-rich $CoFe_2O_4$@BC nanoflowers synthesized via temperature-regulated strategy for an outstanding hydrogen evolution reaction

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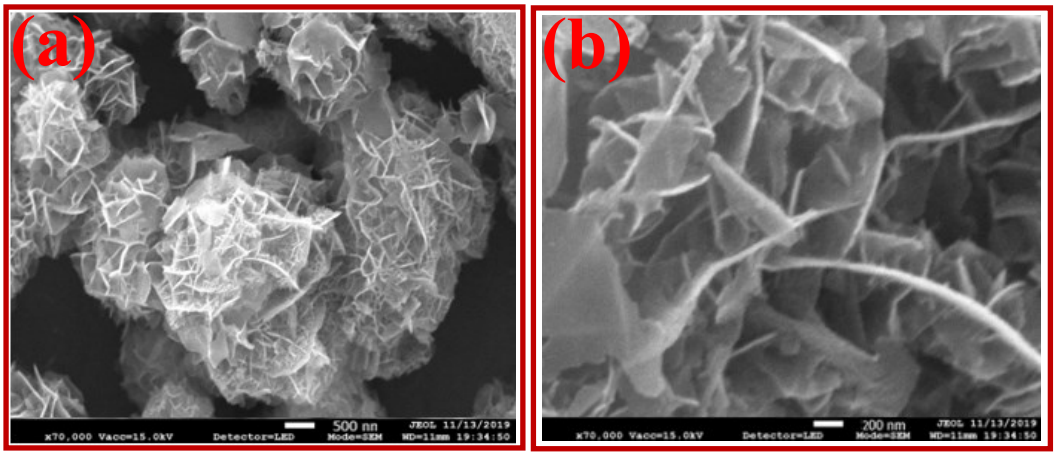
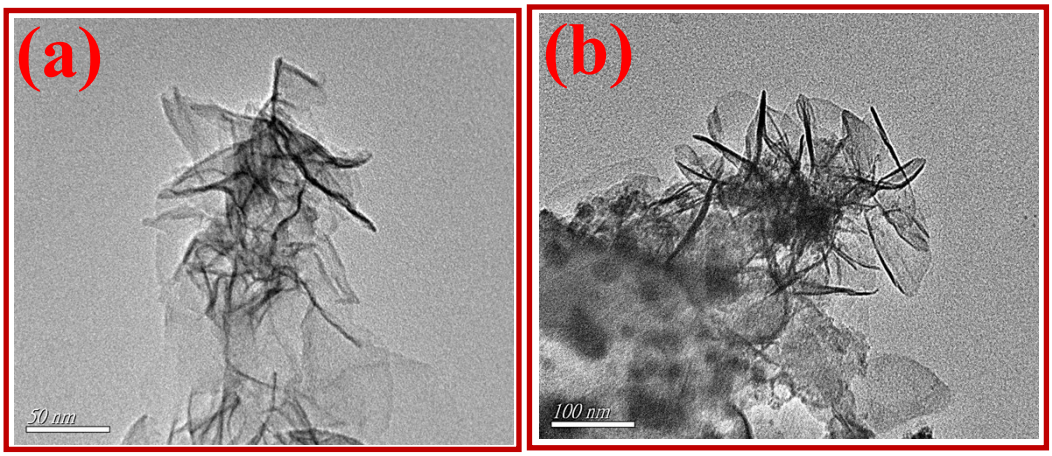


Fig S1. (a and b) SEM images of $CoFe_2O_4$@BC 500°C



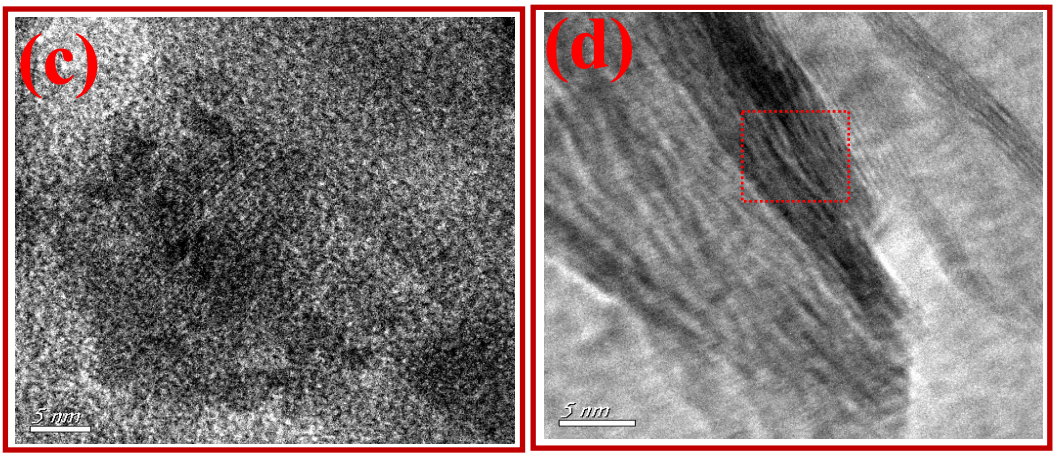


Fig. S2. (a-b) TEM images and (c and d) HR-TEM image of nanoflowers and the red region (*inset: carbon shell*) of the as-prepared $CoFe_2O_4$@BC 500°C.

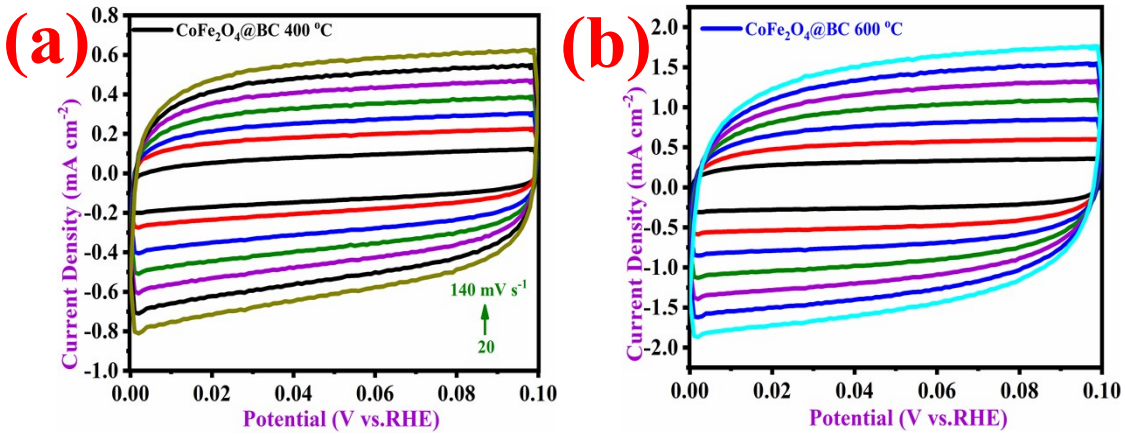


Fig S3. Cyclic voltammograms for (a) $CoFe_2O_4$@BC 400°C and (b) $CoFe_2O_4$@BC 600°C

Table S1. Overpotential at a current density 10 mA cm^{-2} of the as-prepared $CoFe_2O_4$@BC 500°C and $CoFe_2O_4$@BC 600°C catalyst and other reported catalysts for HER.

Electrocatalyst	Electrolyte	η10 (mV)	Nanostructures	Synthetic routes	Ref
$CoFe_2O_4$@BC 500°C $CoFe_2O_4$@BC 600°C	1 M KOH	58 82	Nanoflowers	Chemical reduction and calcination	This work
$NiCo_2S_4$/CC	1 M KOH	263	Nanosheet	Hydrothermal treatment	[1]
Co-NRCNTs	1 M KOH	270	Carbon nanotube	Calcination process	[2]
NiCoP/NF	1 M KOH	350	Nanocube	Pyrolysis	[3]
Ni@B-C 500°C	1 M KOH	176	Nanosheet	Calcination treatment	[4]
CoS_2/CC	1 M KOH	462	Nanowire	Hydrothermal method	[5]
$Ni_{2/3}Fe_{1/3}$-rGO	1 M KOH	560	Nanosheet	Homogeneous precipitation method	[6]
Ni_3Fe@BC-500°C	1 M KOH	330	Nanoparticle	Chemical reduction and pyrolysis	[7]

Co-30Ni-B	**1 M KOH**	**170**	**Nanoparticle**	**Chemical reduction treatment**	**[8]**
Co-Ni-B@NF	**1 M KOH**	**205**	**Nanoparticle**	**Electroless plating method**	**[9]**
Co-B	**1 M KOH**	**250**	**Nanoparticle**	**Chemical reduction method**	**[10]**

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