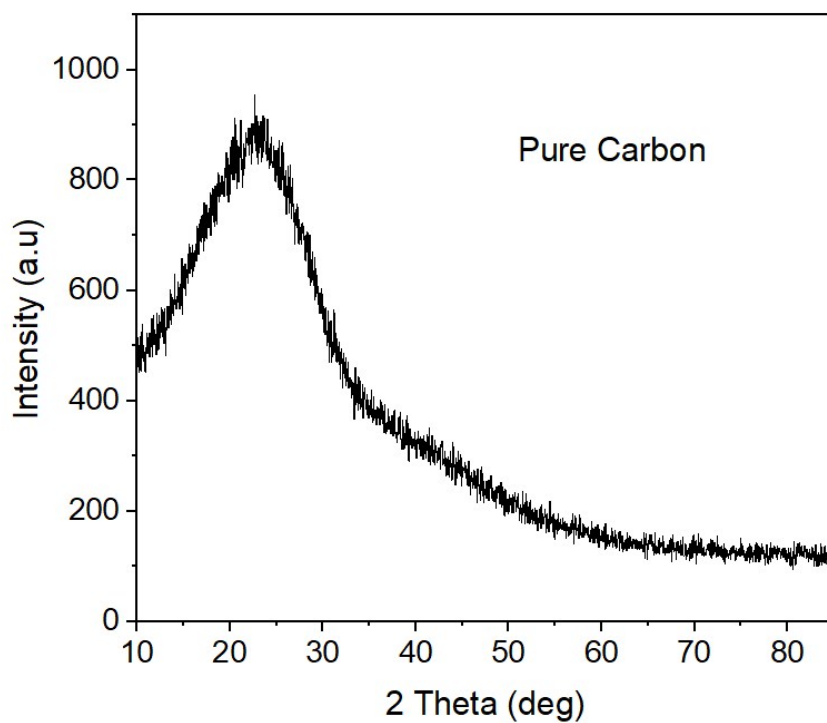
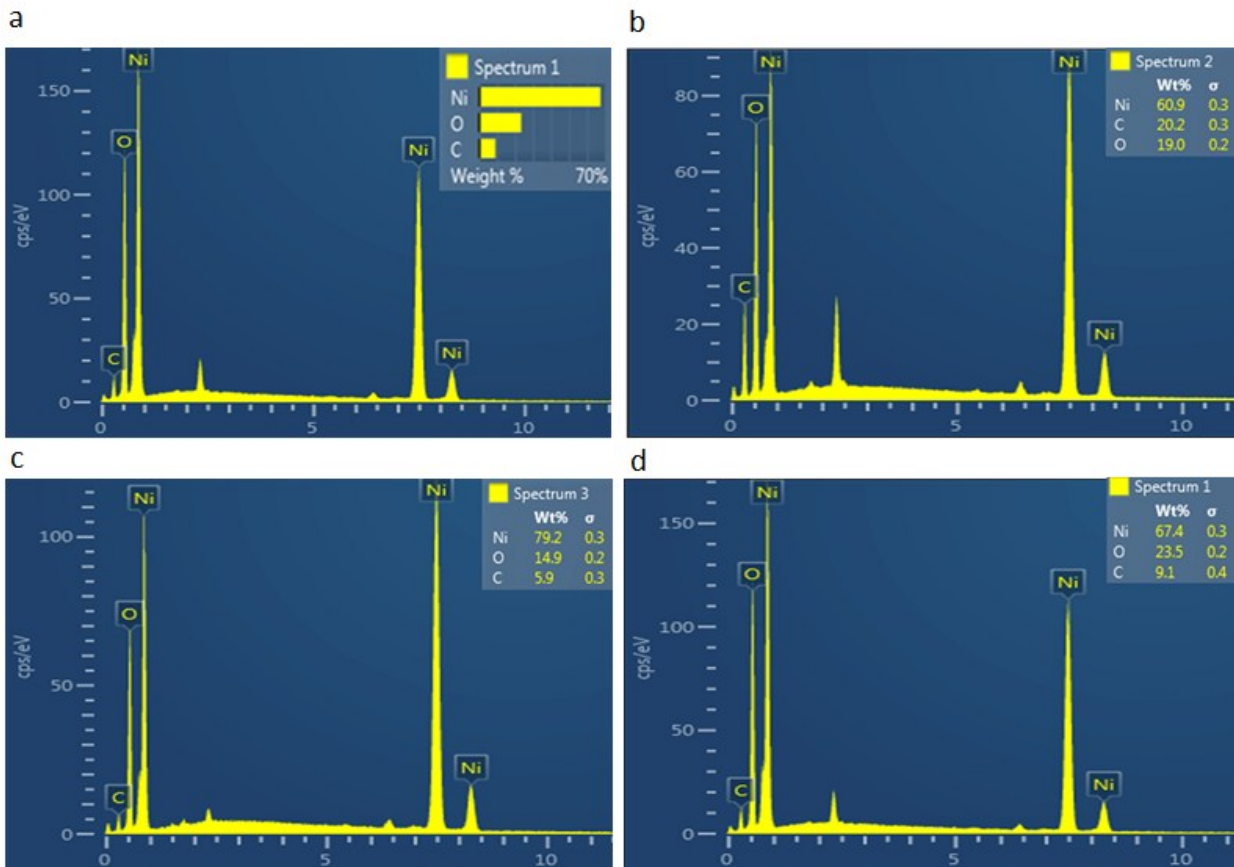


## Supplementary data

### S1. XRD spectra of carbon obtained from the dehydration sucrose sugar



S2: EDS analysis a. sample 1. b, sample 2. d, sample 3. c, sample 4 NiO/Ccomposites respectively



**Table S1.** The comparison of the proposed NiO/C electrocatalyst with the reported Ni-based electrocatalysts

Catalyst	Electrolyte	Tafel slope mVdec <sup>-1</sup>	Overpotential @ 10 mA/cm <sup>2</sup>	References
NiCo <sub>2</sub> O <sub>4</sub> nanosponge	0.1 M KOH	64.4	1.592	48
NiCo <sub>2</sub> O <sub>4</sub> nanosheet decorated on CNT	1MKOH	68.1	1.62	49
CPF/NiCo <sub>2</sub> O <sub>4</sub> (porous nanowire)/Co <sub>0.57</sub> Ni <sub>0.43</sub> LMOs	0.1 M KOH	63	1.57	50
CPF/NiCo <sub>2</sub> O <sub>4</sub>	0.1 M KOH	123	1.78	50
NiCo <sub>2</sub> O <sub>4</sub> /r-GO	0.1 M KOH	63	1.62	51
Au-NiCo <sub>2</sub> O <sub>4</sub> on 3D graphene like material	0.1 M KOH		0.7 Vvs SCE for 9.1 mA/cm <sup>2</sup>	52
NiCo <sub>2</sub> O <sub>4</sub> hollow microcuboids	1M NaOH	53	1.52	53
Mesoporous NiCo <sub>2</sub> O <sub>4</sub> nanocages	0.1 M KOH	75	1.57	54
NiCo <sub>2</sub> O <sub>4</sub> /NiO Sheets	1 M NaOH	61	1.59	55
NiO/C	1M KOH	55	1.45	This work