

Electronic Supplementary Information

Chemical bath deposition of NiCo_2S_4 nanostructures supported on conductive substrate for efficient quantum-dot-Sensitized solar cells and methanol oxidation

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Energy-Dispersive X-ray (EDX) Spectroscopy of NiCo_2S_4 nanostructures:

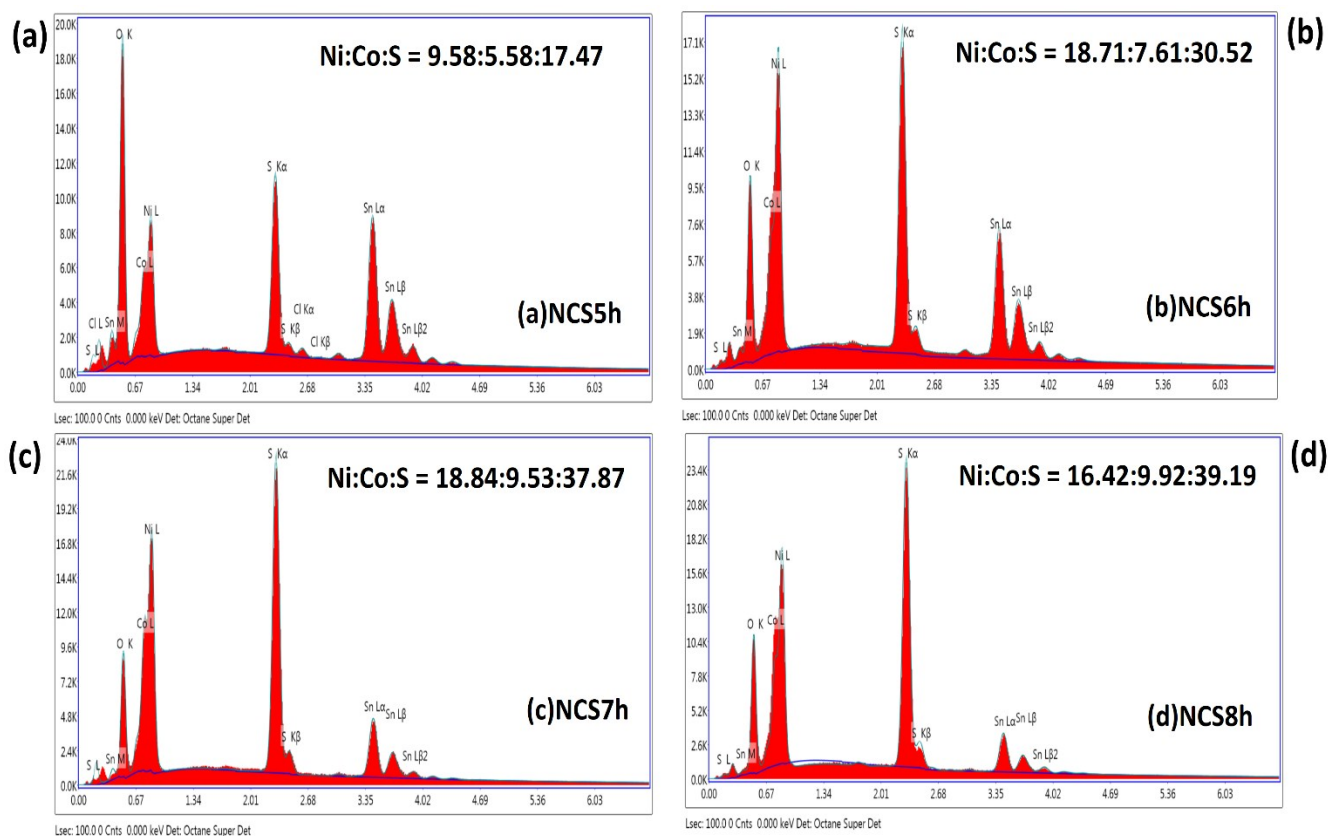


Fig. S1. (a-d) Energy-Dispersive X-ray (EDX) Spectroscopy of NiCo_2S_4 nanostructures: (a) NCS5h, (b) NCS6h, (c) NCS7h, and (d) NCS8h.

AFM image of NCS7h and NCS8h electrodes:

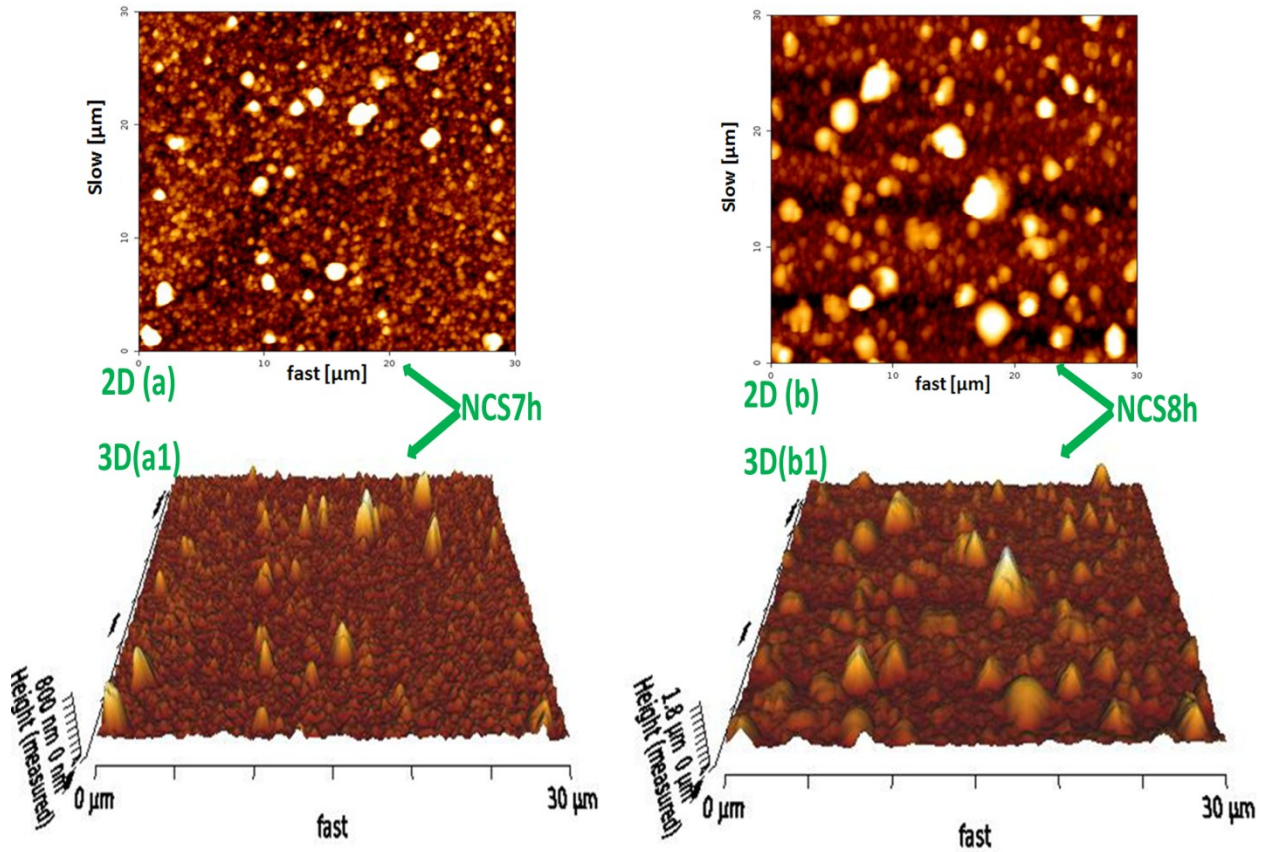


Fig S2. 2D (a, and b) and 3D (a1, and b1) AFM images of NCS7h, and NCS8h CEs.

NiCo₂S₄ photo-voltaic performance compared to the recent results of quantum dot sensitized solar cells:

Fig S3 shows the NiCo₂S₄ photo-voltaic performance compared to the recent results of quantum dot sensitized solar cells (NiCoS, CuS/rGo, CuS/PbS, mOs/Graphene, MoO/C, CuS/Graphene, NiS, CuS, CoSe, CuInSe, PbS, CoS/C), respectively. The results are shown in table 1.

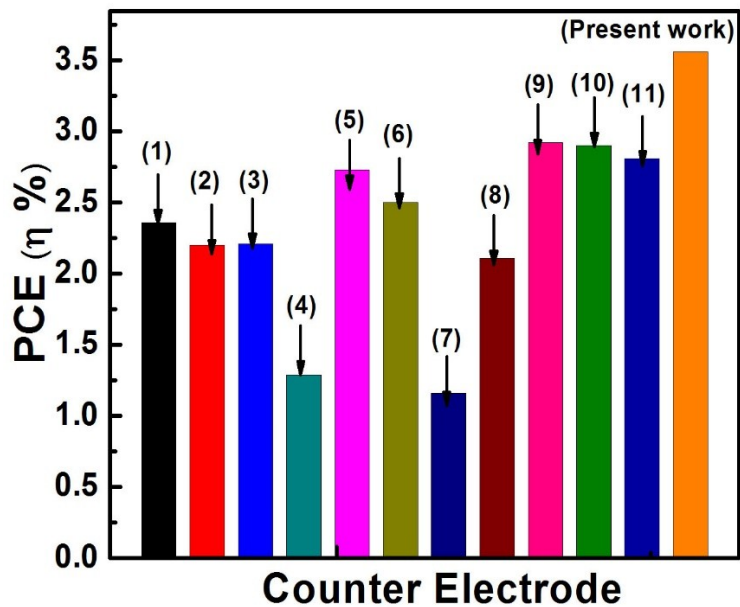


Fig. S3. NiCo₂S₄ photo-voltaic performance compared to the recent results of quantum dot sensitized solar cells: PCE values for cells (NiCoS, CuS/rGo, CuS/PbS, mOs/Graphene, MoO/C, CuS/Graphene, NiS, CuS, CoSe, CuInSe, PbS, CoS/C) were taken from ref. 1–12.

Serial Number	Counter Electrode	Efficiency	Year
1	NiCoS	3.14	2018
2	CuS/RgO	2.36	2018
3	CuS/PbS	2.2	2015
4	MoS/Graphene	2.21	2017
5	MoO/C	1.29	2017
6	CuS/Graphene	2.73	2016

7	NiS	2.5	2017
8	CuS	1.16	2017
9	CoSe	2.11	2015
10	CuInSe	2.92	2018
11	PbS	2.90	2017
12	CoS/C	2.81	2017
13	This Work	3.53	

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