

Supplementary Information for

**In-Situ Grown Cobalt Selenide/Graphene Nanocomposites Counter Electrode for
Enhanced Dye-sensitized Solar Cell Performance**

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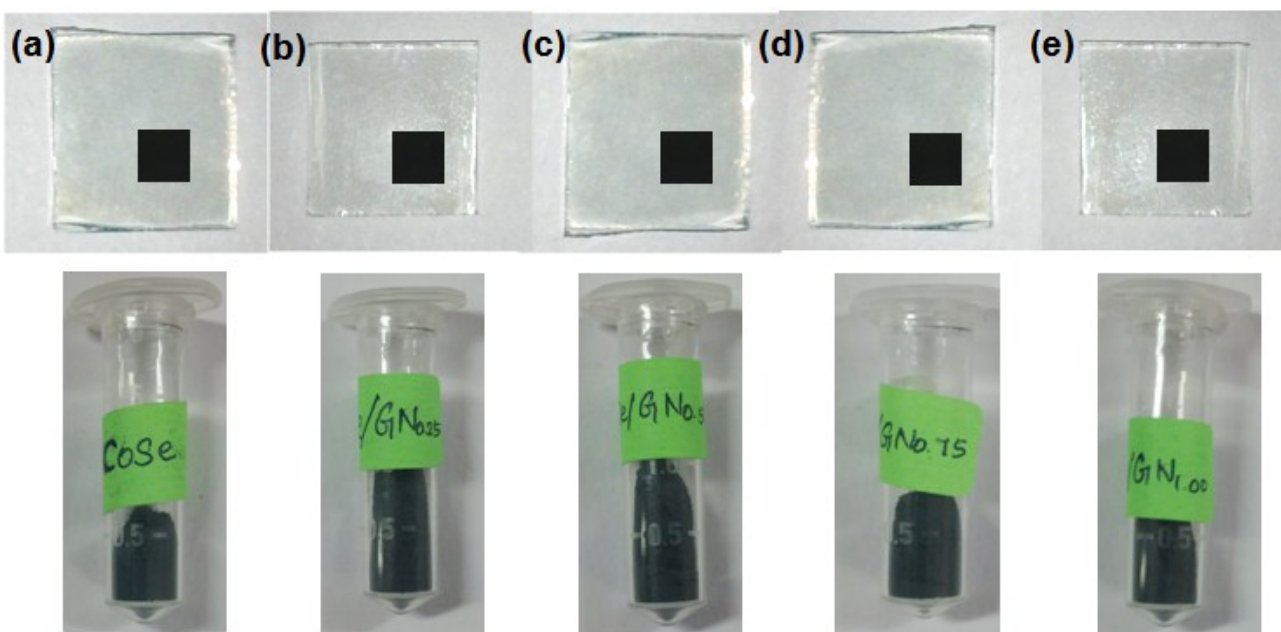


Fig. S1. Images of the (a) CoSe (b) CoSe/GN_{0.25}, (c) CoSe/GN_{0.50} (d) CoSe/GN_{0.75} and (e) CoSe/GN_{1.00} counter electrodes.

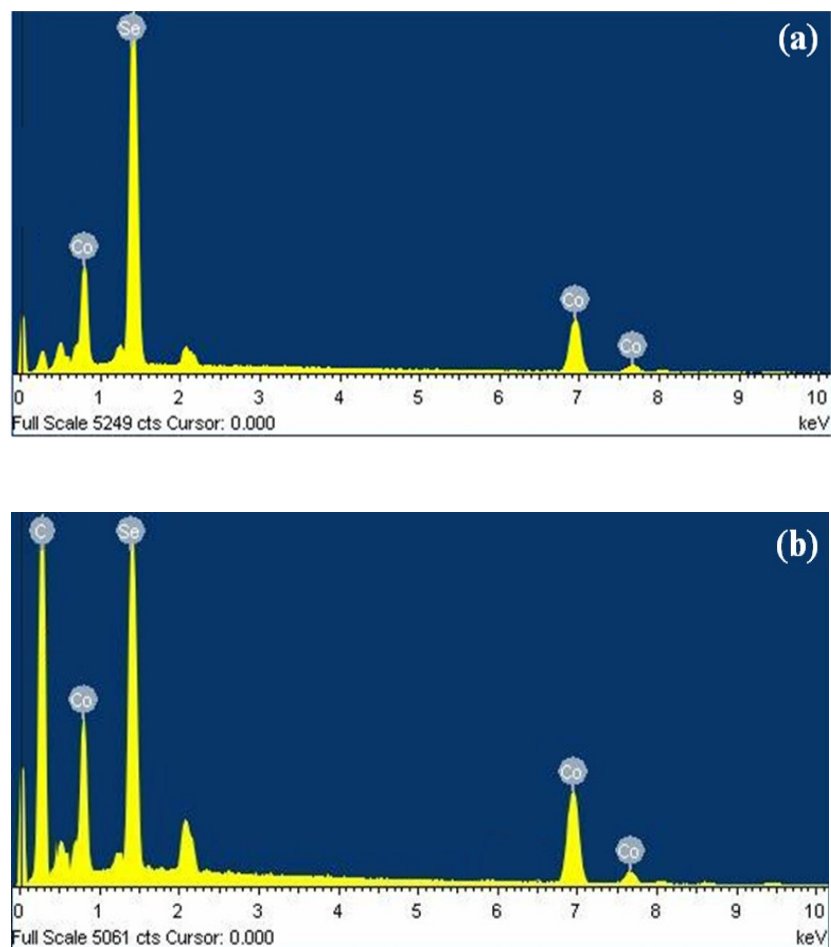


Fig. S2. EDX of (a) CoSe nanoparticles and (b) CoSe/GN_{0.50} nanohybrids.

Table S1. Statistical data of the photovoltaic parameters for DSSCs fabricated with platinum counter electrode.

DSSC	V _{oc} (V)	J _{sc} (mA/cm ²)	FF	η(%)
1	0.74	15.18	0.684	7.68
2	0.74	15.17	0.683	7.68
3	0.74	15.18	0.684	7.68
4	0.74	15.18	0.684	7.67
5	0.74	15.17	0.684	7.68
Average	0.74	15.18	0.684	7.68
Deviation	0.00	0.0048	0.00032	0.0032

Table S2 Statistical data of the photovoltaic parameters for DSSCs fabricated with CoSe counter electrode.

DSSC	V_{oc} (V)	J_{sc} (mA/cm⁻²)	FF	η(%)
1	0.76	14.51	0.670	7.39
2	0.76	14.49	0.672	7.40
3	0.76	14.50	0.670	7.38
4	0.76	14.52	0.669	7.39
5	0.76	14.51	0.670	7.39
Average	0.76	14.51	0.670	7.39
Deviation	0.00	0.0088	0.00072	0.004

Table S3 Statistical data of the photovoltaic parameters for DSSCs fabricated with CoSe/GN_{0.50}counter electrode.

DSSC	V_{oc} (V)	J_{sc} (mA/cm⁻²)	FF	η(%)
1	0.75	17.96	0.688	9.27
2	0.75	17.95	0.687	9.27
3	0.75	17.96	0.686	9.25
4	0.75	17.96	0.687	9.25
5	0.75	17.95	0.688	9.27
Average	0.75	17.96	0.687	9.26
Deviation	0.00	0.0048	0.00064	0.0096