Electronic Supplementary Material (ESI) for Sustainable Energy & Fuels.

Gelatin-Assisted Co-exfoliation of Graphene nanoplatelets/MoS_2 for High-Performance Supercapacitors

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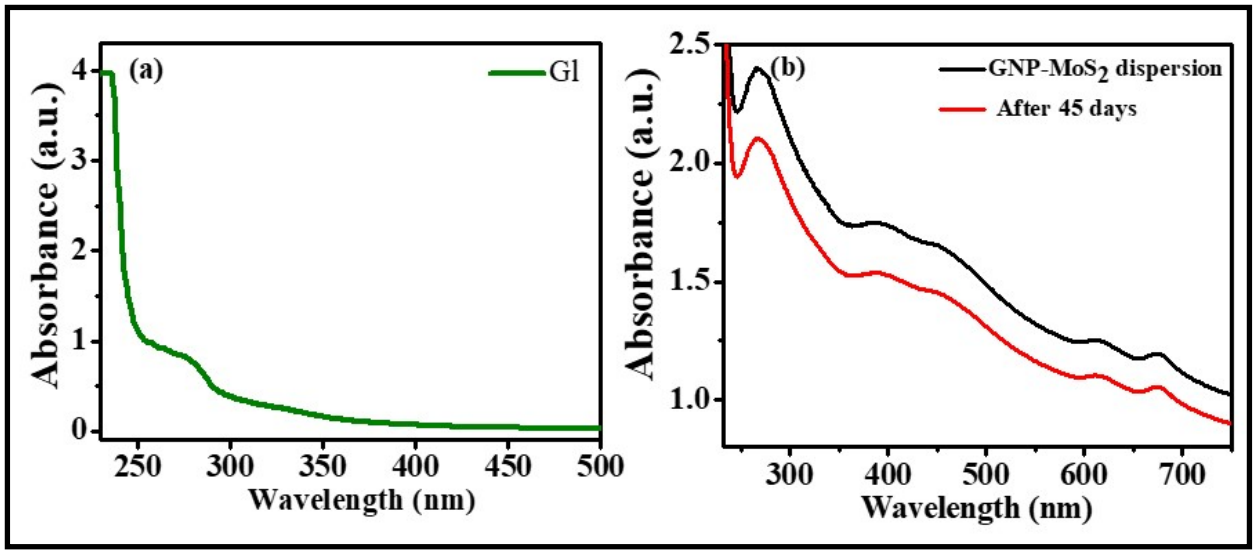

Figure S1. UV−vis spectrum (a) Gelatin solution (b) GNP/MoS_2 dispersion and stability after 45days.

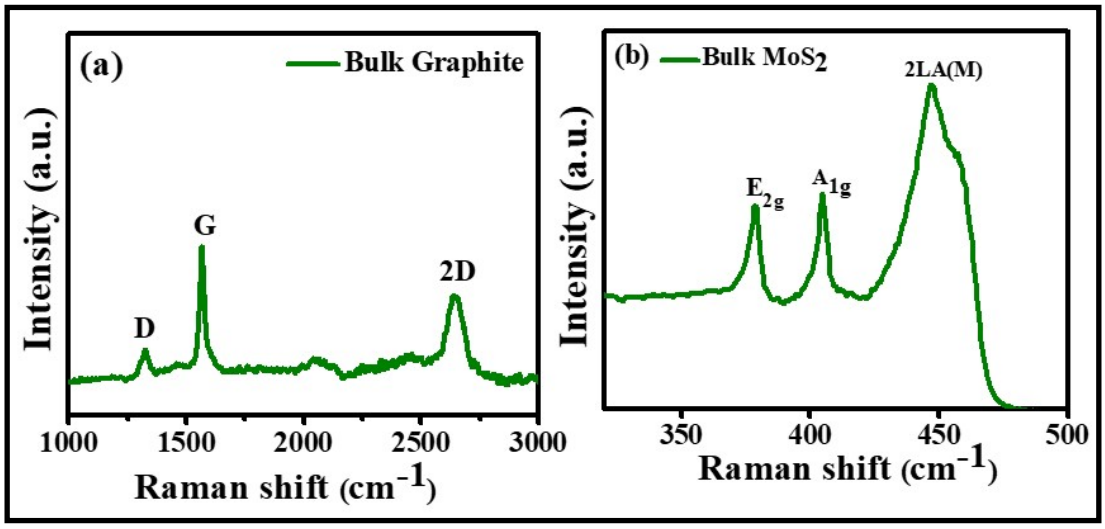

Figure S2. (a) Raman spectra of Bulk graphite (b)Bulk MoS_2.

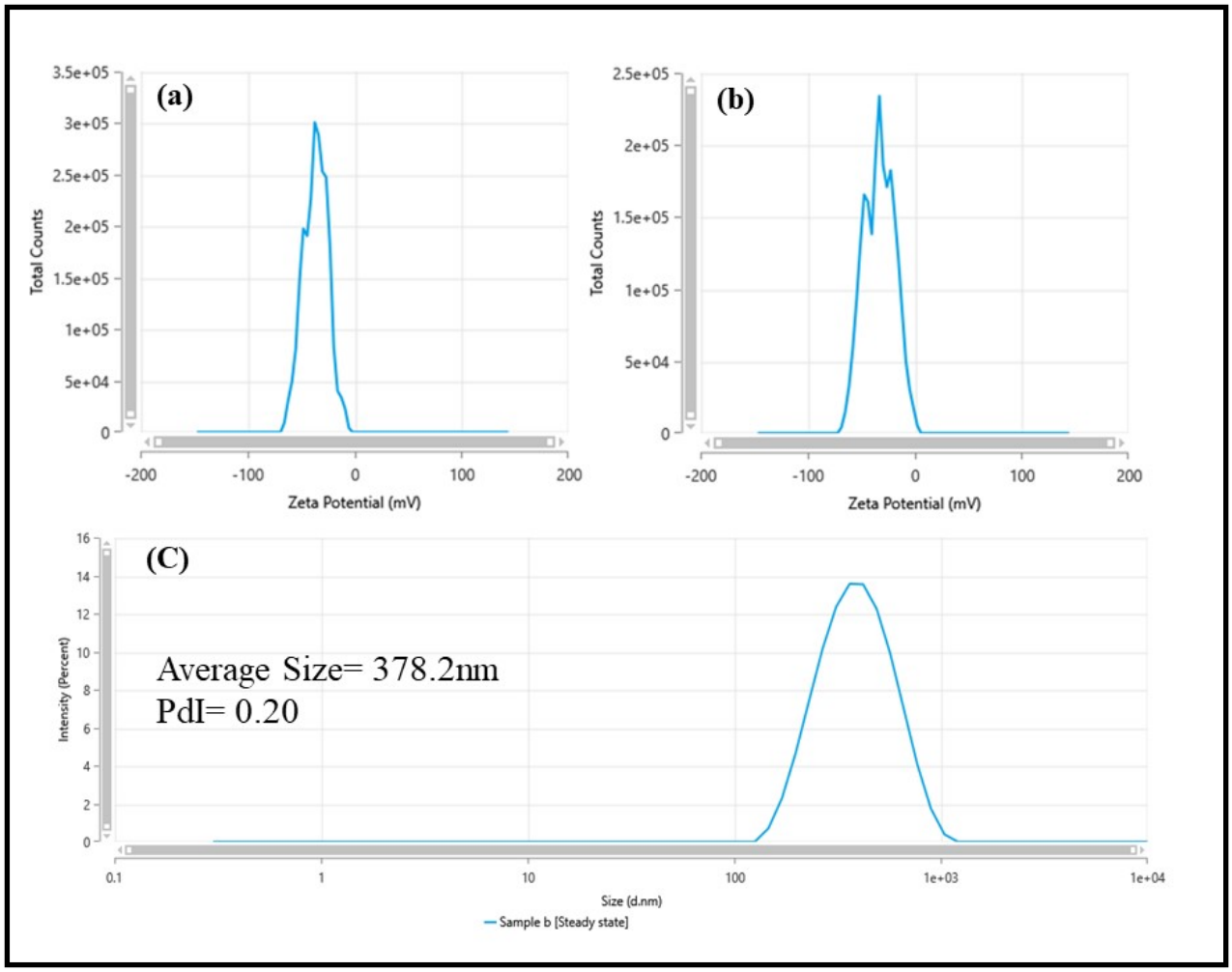

Figure S3 (a) Zeta potential of gelatin (b)Zeta potential of GNP/MoS_2 dispersion (c) DLS of GNP/MoS_2 dispersion.

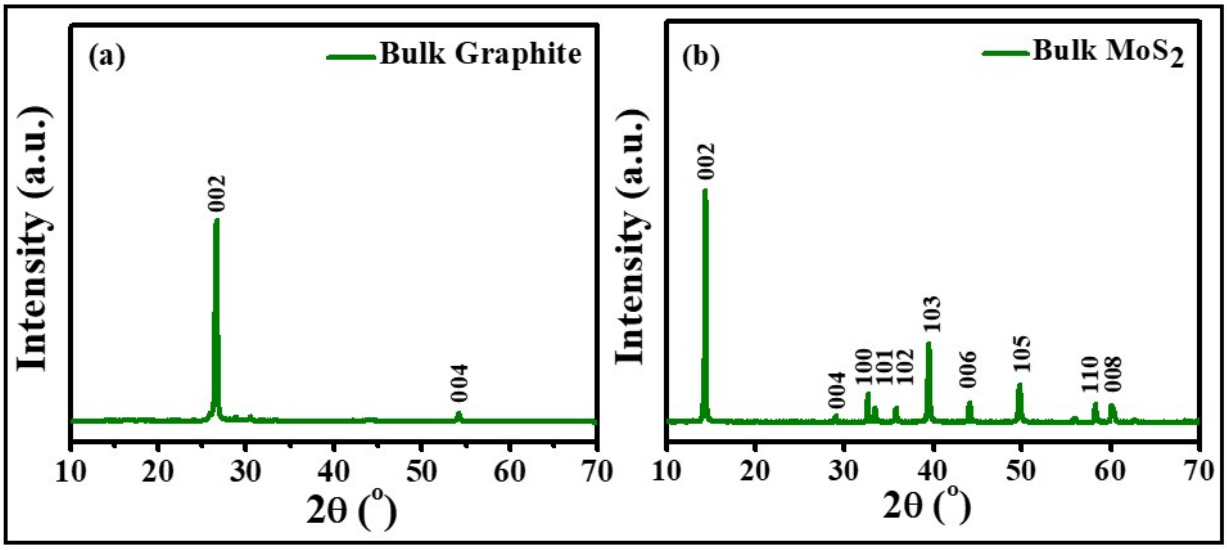

Figure S4 (a) PXRD pattern of Bulk graphite (b) PXRD pattern of bulk MoS_2.

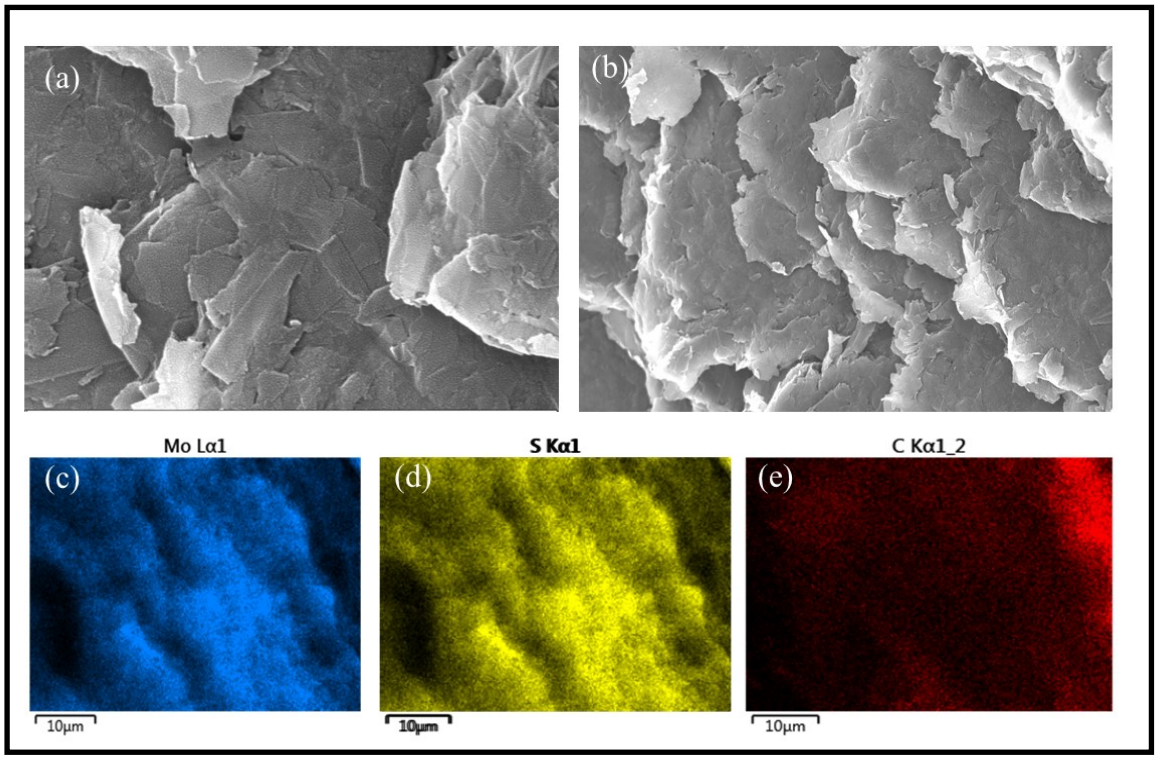

Figure S5. (a and b) SEM images of GNP/MoS_2 at different magnifications (scale bars: 200nm,1 μm, respectively). (c) Mo, (d) S and (e) C for elemental mapping.

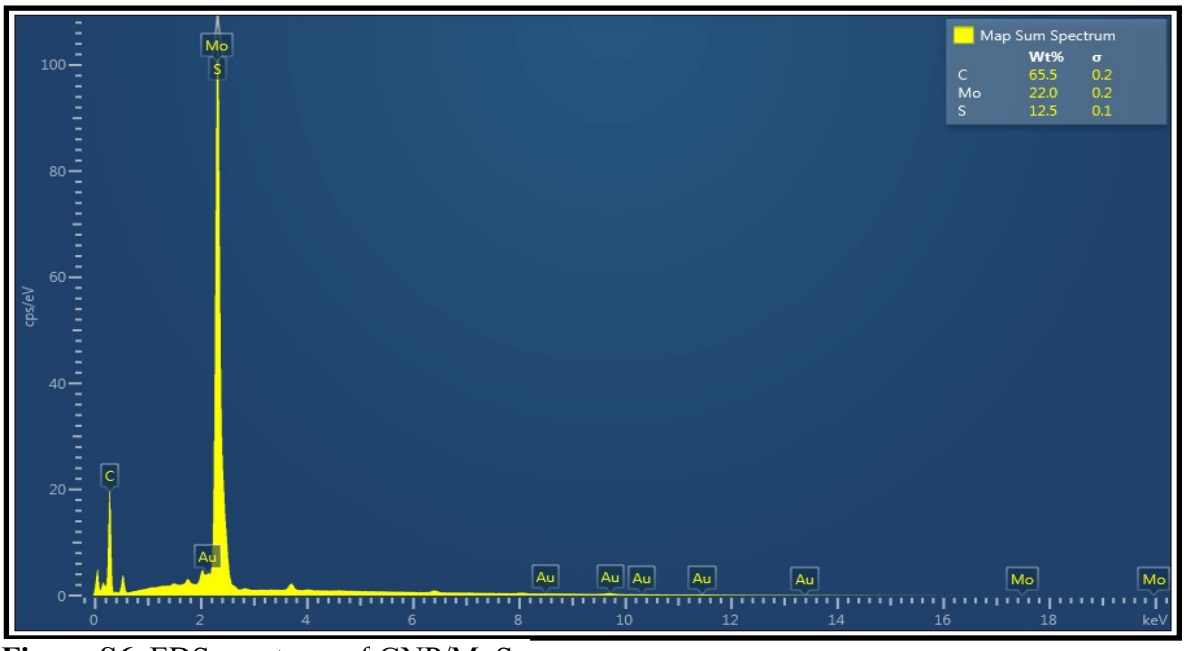

Figure S6. EDS spectrum of GNP/MoS_2.

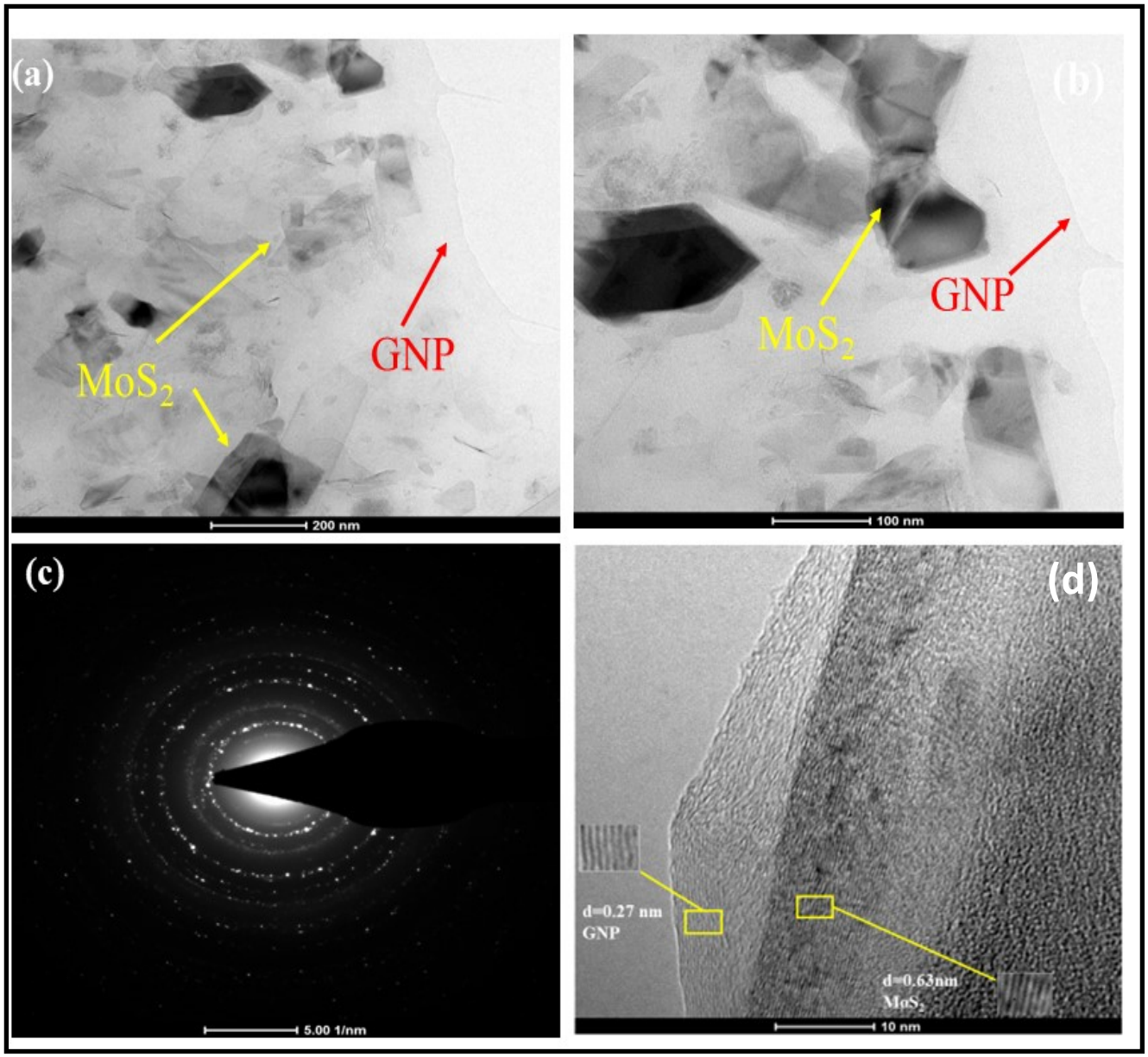

Figure S7. (a, b) TEM image of co-exfoliated graphene-nanoplatelets/MoS_2 (c) SAED patterns of the GNP/MoS_2 having concentric rings (d) IFFT image of GNP/MoS_2 marked area.

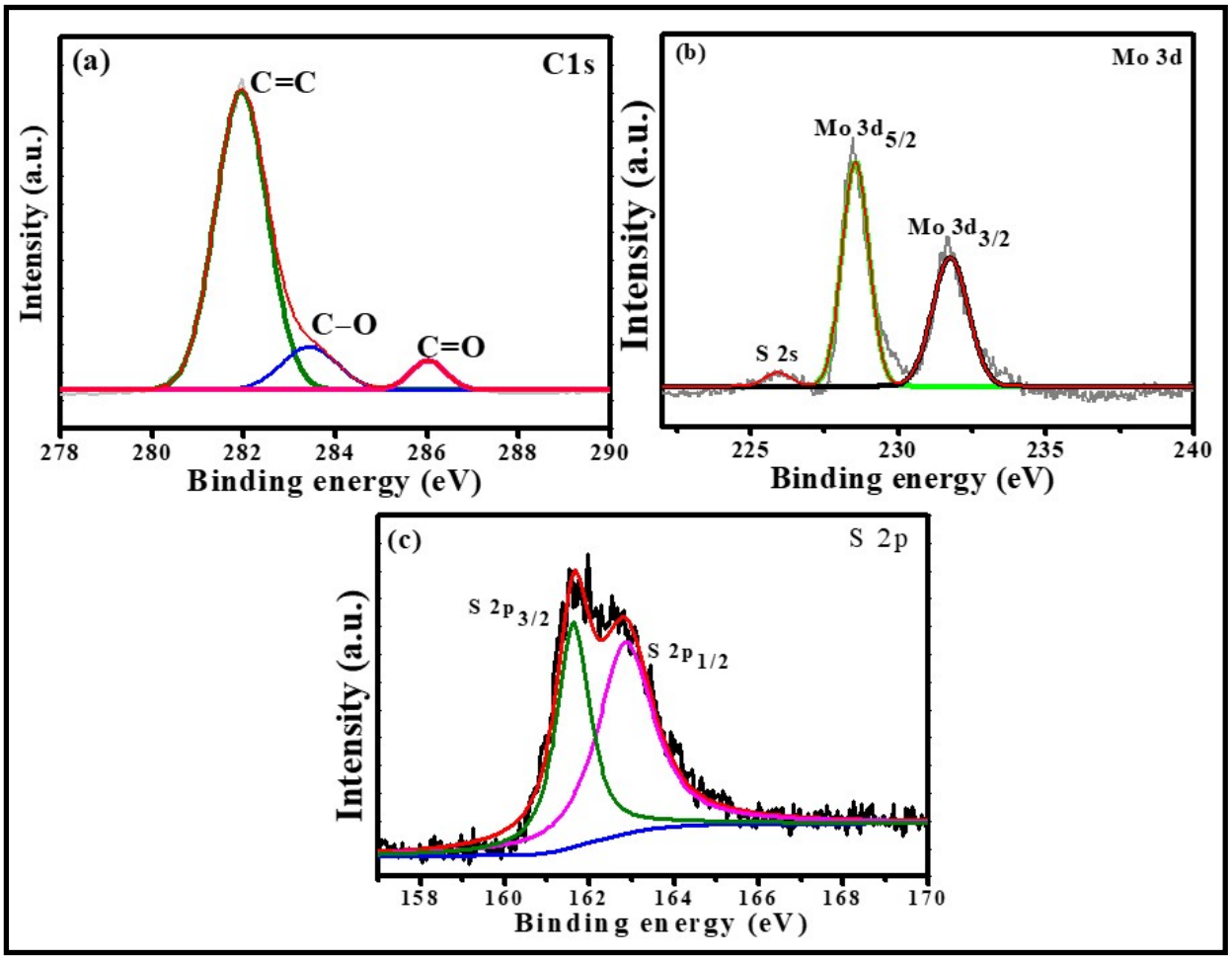

Figure S8. High-resolution XPS spectra of (a) C 1s, (b) Mo 3d, and (c) S 2p of Co-exfoliated GNP/MoS_2.

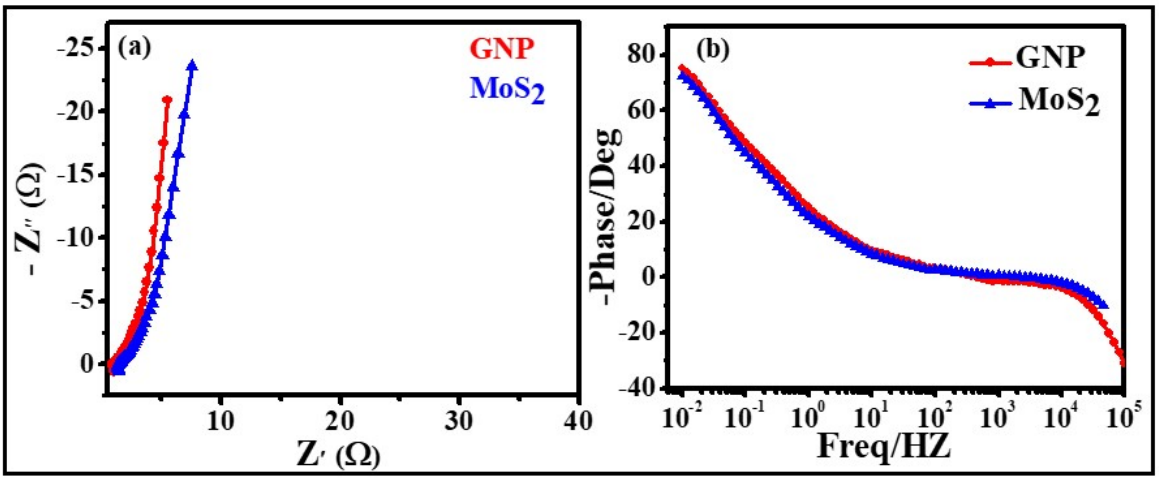

Figure S9. (a) EIS of GNP and MoS_2 (b) Bode plot of GNP and MoS_2.

Table 1. Circuit Parameters Generated after the Fitting to the Given Equivalent Circuit.

Samples	Rs	Rct	W	C
GNP/MoS_2	0.2451	0.9555	0.5302	0.3499
GNP	2.055	0.5874	0.5252	0.03499
MoS_2	1.386	0.2282	0.4059	0.01902

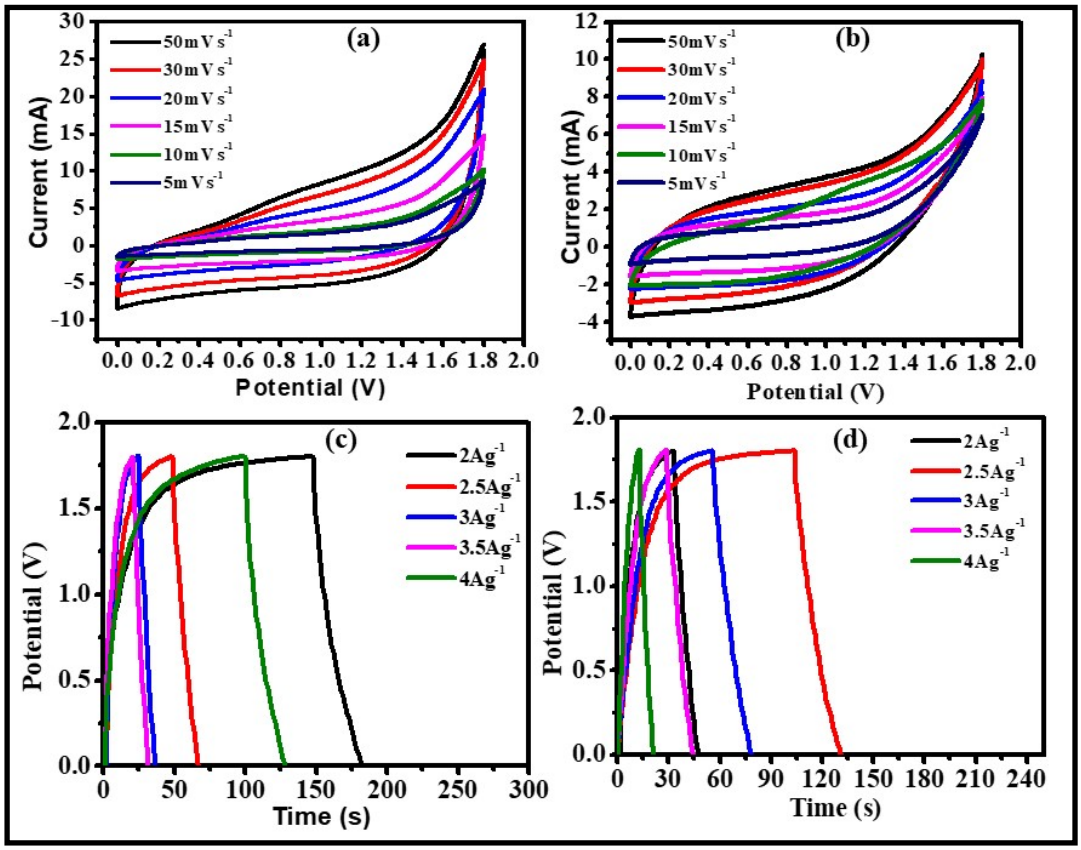

Figure S10. CV profile of the ASC devices at various scan rates for (a) NaOH/PVA (b) KOH/PVA. GCD profile of ASC device at different current densities (c) NaOH/PVA and (d) KOH/PVA.