Supporting Information

MoS$_2$ nanoflower-decorated reduced graphene oxide paper for high-performance hydrogen evolution reaction

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**Figure S1.** SEM images of (a) MoS$_2$NFs and (b) MoS$_2$AGs, which were synthesized in presence and absence of TOP, respectively.

**Figure S2.** SEM images of the top view of (a) MoS$_2$NFs/rGO which was prepared in the presence of TOP, and (b) pure rGO paper.

**Figure S3.** (a) TEM image of the top view of MoS$_2$NFs/rGO. (b) HRTEM image of the edge of MoS$_2$NFs/rGO.
Figure S4. XPS survey spectrum of MoS$_2$NFs/rGO.

Figure S5. High-resolution XPS spectra of (a) C 1s, (b) O 1s, (c) Mo 3d and (d) S 2p on MoS$_2$NFs/rGO.
Figure S6. SEM image of the top view of MoS$_2$AGs/rGO which was prepared in the absence of TOP.

Figure S7. (a) Polarization curves of rGO paper and rGO paper supported on Cu foil. (b) The corresponding Tafel curves.
Figure S8. Polarization curves (a) and the corresponding Tafel curves (b) of MoS$_2$NF-modified GCE (black) and MoS$_2$NFs/rGO electrode (red). The catalyst loading amount is 0.116 mg/cm$^2$.

Figure S9. Durability test of MoS$_2$NF-modified GCE (loading amount is 0.285 mg/cm$^2$). 5.7% of current was lost after 300 cycles.