## **Supplementary Information**

## Microwave-Assisted Mass Synthesis of Mo<sub>1-x</sub>W<sub>x</sub>S<sub>2</sub> Alloy Composites

## with Tunable Lithium Storage Property

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Figure S1. SEM (a, c, e, g) and TEM (b, d, f, h) images of  $Mo_{1-x}W_xS_2$  (x=0, 0.1, 0.2, and 0.3) alloy nanoflowers, respectively.



**Figure S2.** SEM (a, c, e, g) and TEM (b, d, f, h) images of  $Mo_{1-x}W_xS_2$  (x=0.4, 0.5, 0.8, and 1) alloy nanoflowers, respectively.



Figure S3. (a) TEM image of  $Mo_{0.4}W_{0.6}S_2$  alloy nanoflowers and the corresponding EDS elemental mapping images of (b) molybdenum, (c) tungsten, (d) sulfur, and carbon.



Figure S4. (a) TEM image of  $MoS_2$  nanoflowers and the corresponding EDS elemental mapping images of (b) molybdenum and (c) sulfur. (d) TEM image of  $WS_2$  nanoflowers and the corresponding EDS elemental mapping images of (e) tungsten and (f) sulfur.



Figure S5. (a) XPS spectra of  $MoS_2$  nanoflowers and broad-scan spectra of (b) Mo 3d and (c) S 2p. (d) XPS spectra of  $WS_2$  nanoflowers and broad-scan spectra of (e) W 4f and (f) S 2p.



**Figure S6.** (a) Conductivity of  $Mo_{1-x}W_xS_2$  (x=0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.8, and 1) alloy nanoflowers. (b) Rate performance of  $Mo_{1-x}W_xS_2$  alloy nanoflowers anodes at different current densities.



Figure S7. (a) CV curves of  $MoS_2$  nanoflowers and (b) CV curves of  $WS_2$  nanoflowers.