

Supporting Information

Two-Dimensional Water-Coupled Metallic MoS₂ with Nanochannels for Ultrafast Supercapacitors

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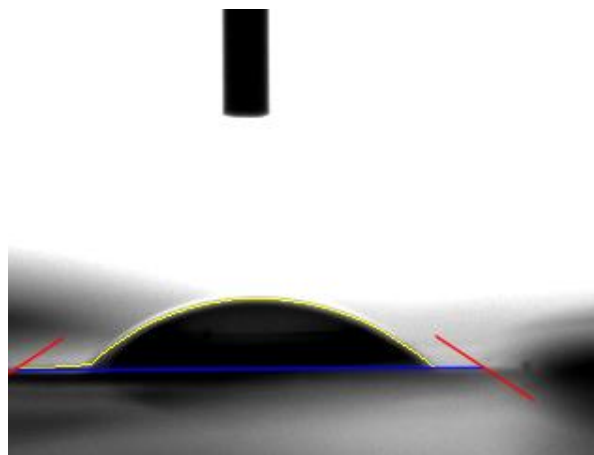


Figure S1. Contact angle of as-prepared M- MoS₂. The contact angle is around 22 ° which indicat the hydrophilic nature of this multilayer M-MoS₂.

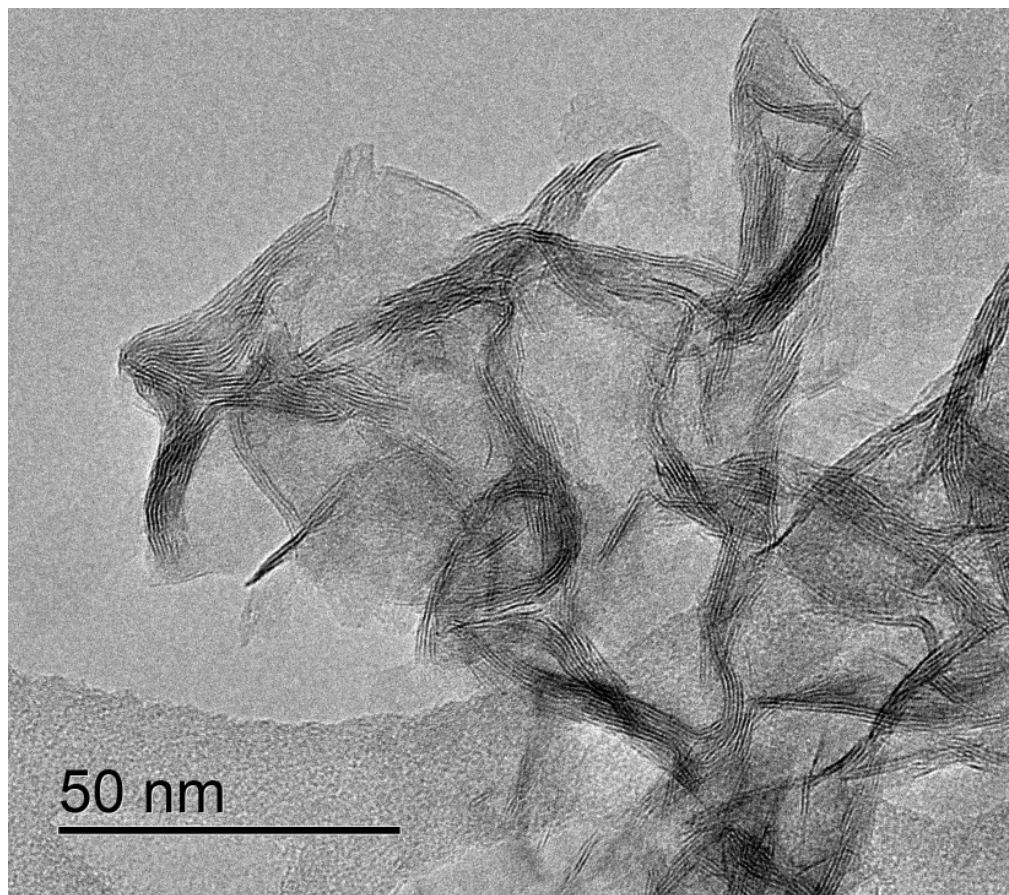


Figure S2. Low magnification transmission electron microscopy of multilayer M- MoS₂.

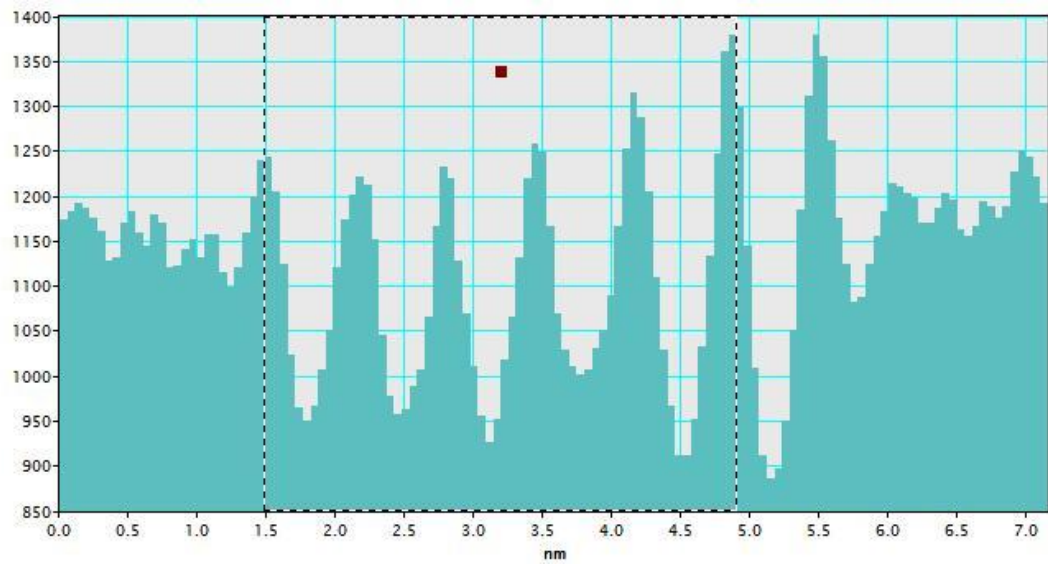


Figure S3. Layer distance of multilayer M- MoS₂. The distance is 3.25 nm for 5 layers. Therefore, layer distance is around 0.65 nm.

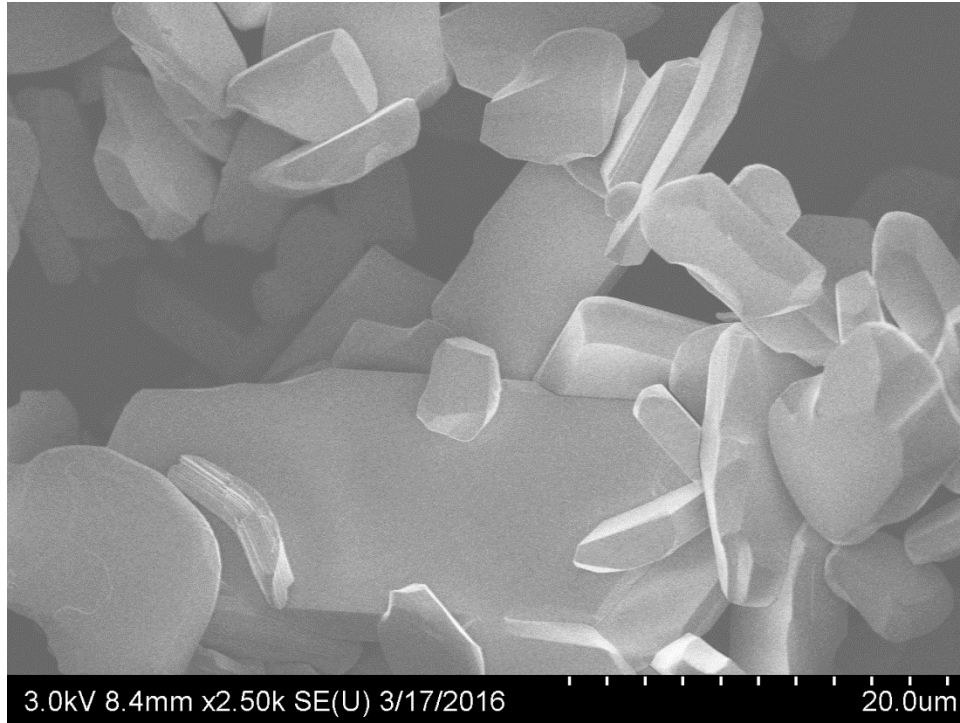


Figure S4. MoO₃ raw materials for synthesis of multilayer M- MoS₂.

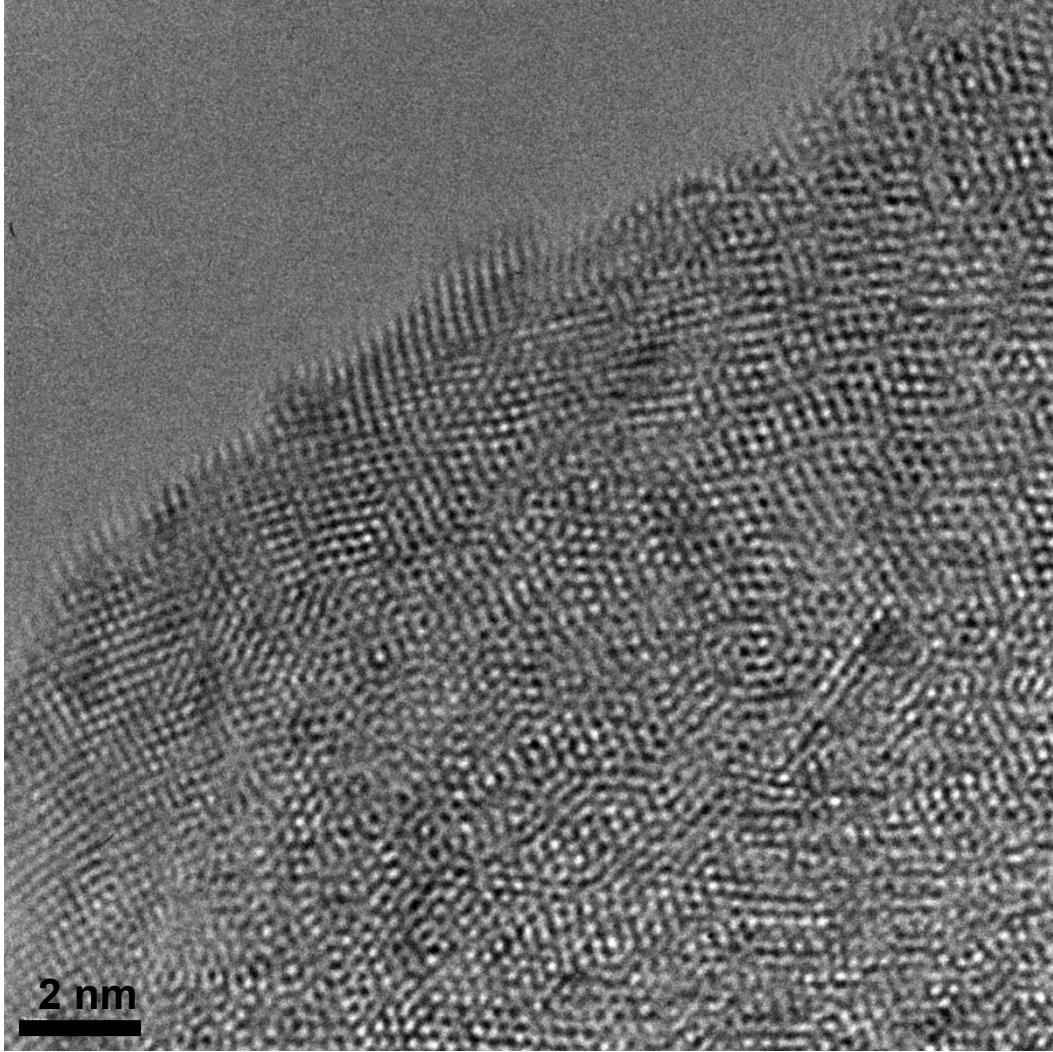


Figure S5. High resolution transmission electron microscopy of multilayer M- MoS₂. Atomic arrangement is regular. However, we also can see some defects in some part. We consider these defects are benefit for our supercapacitor.

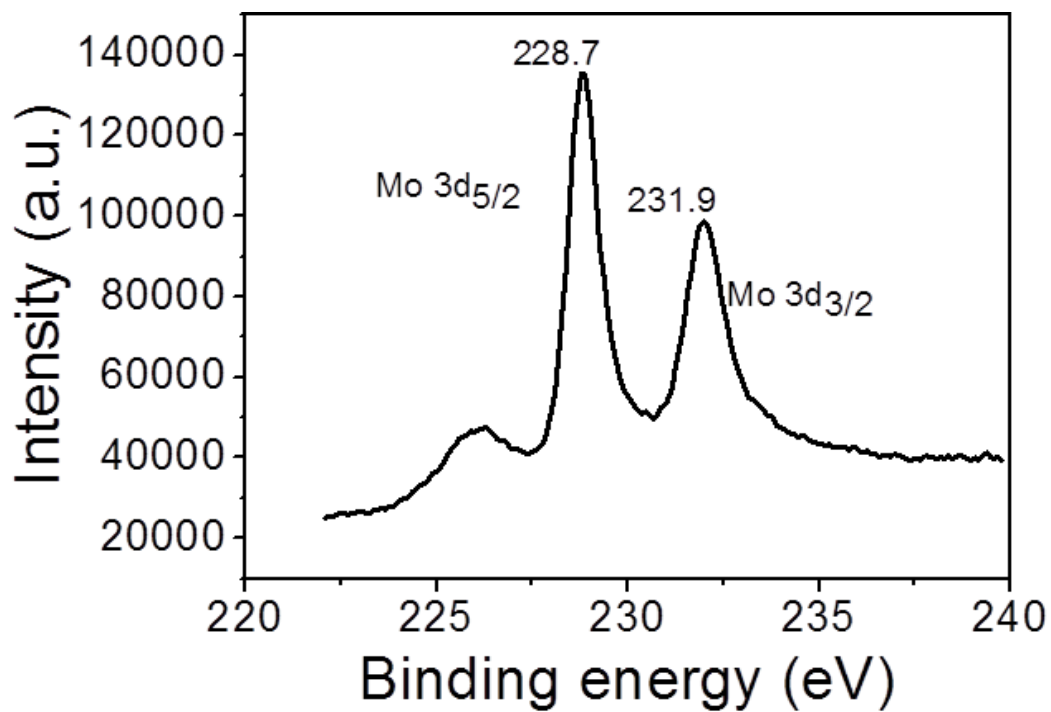


Figure S6. Mo peaks in XPS. We can see the 3d_{5/2} and 3d_{3/2} of Mo which is located at 228.7 and 231.9 eV. This result confirmed that our MoS₂ is metallic state.

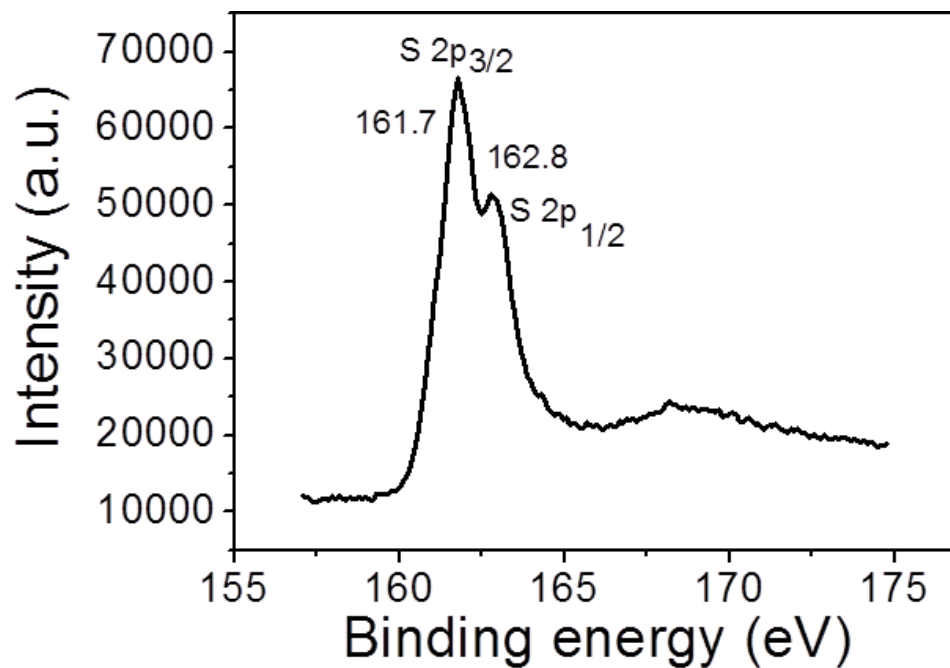


Figure S7. Sulfur peaks in XPS. We can see the 2p_{3/2} and 2p_{1/2} of sulfur which is located at 161.7 and 162.8 eV.

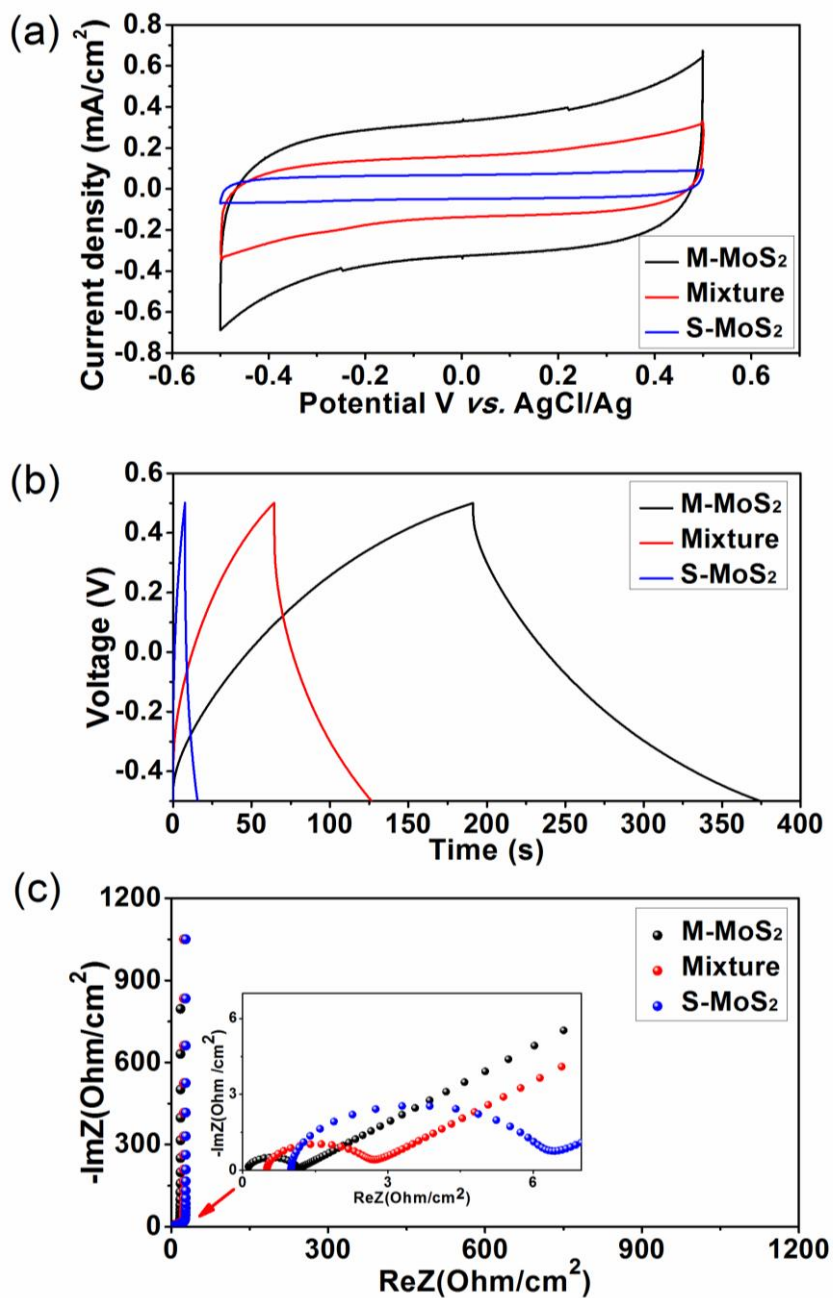


Figure S8. Comparison of electrochemistry performance of M-MoS₂, H-MoS₂ and Mixture-MoS₂ based supercapacitors (two-electrode cells) in 1 M Li₂SO₄ electrolyte. (a) CV curves recorded at a scan rate of 50 mV/s. (b) Galvanostatic charge/discharge at 1A/g. (c) Impedance Nyquist plots obtained in the frequency range of 100 kHz to 0.01 Hz at the open circuit potential.

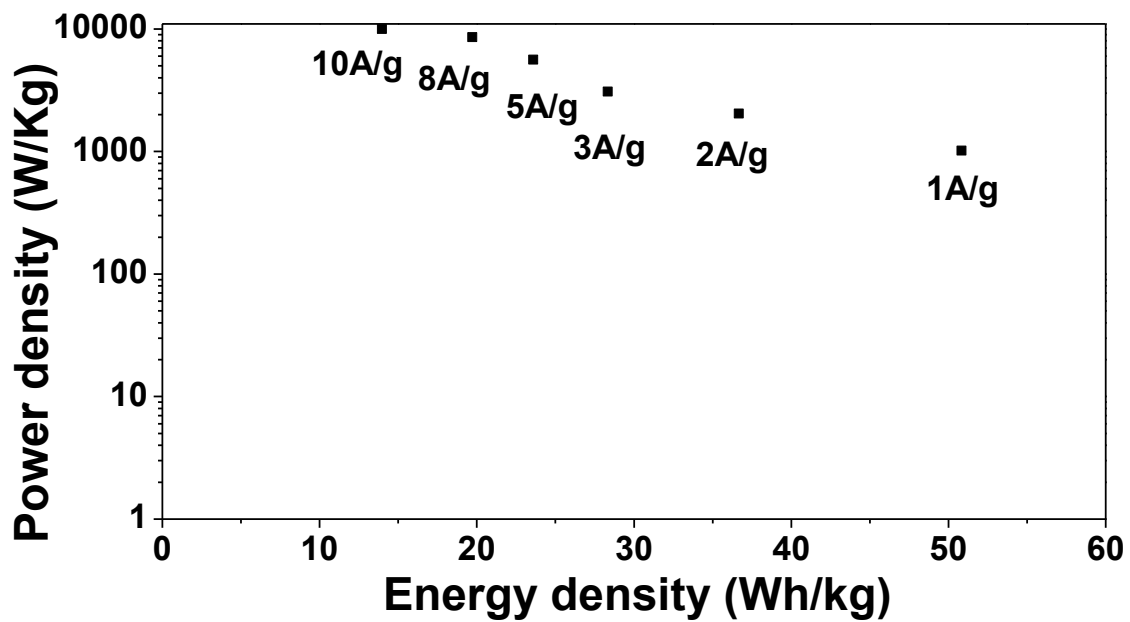


Figure S9. Power density and energy density of supercapacitor based on our multilayer M-MoS₂.