

## *Supplementary materials*

# **Synthesis of Molybdenum Sulfide/Tellurium Hetero-Composite by a Simple One-Pot Hydrothermal Technique for High-Performance Supercapacitor Electrode Material**

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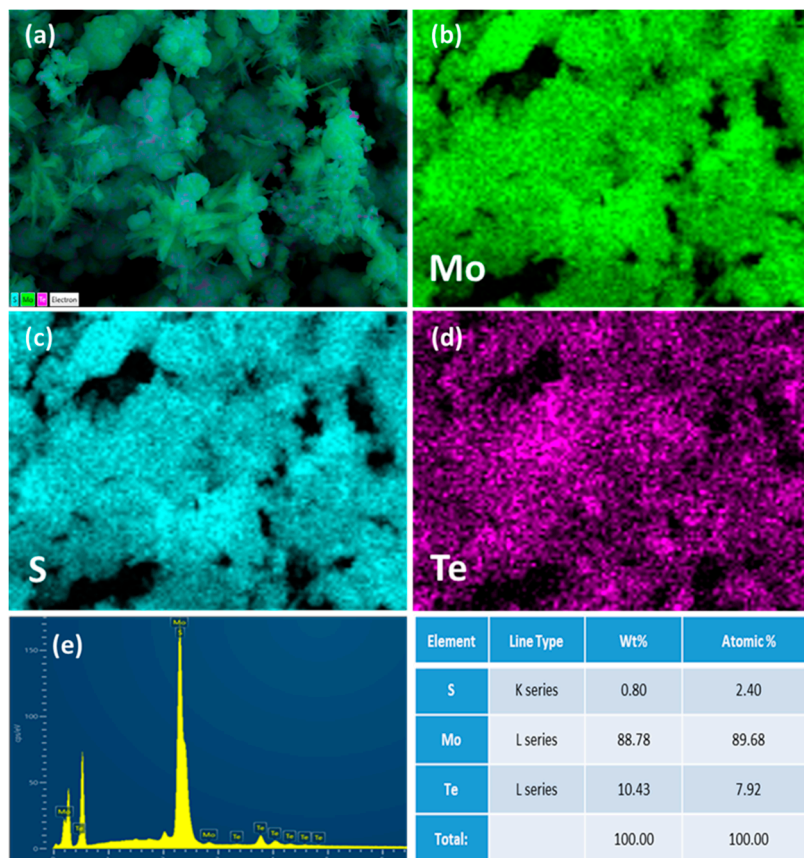
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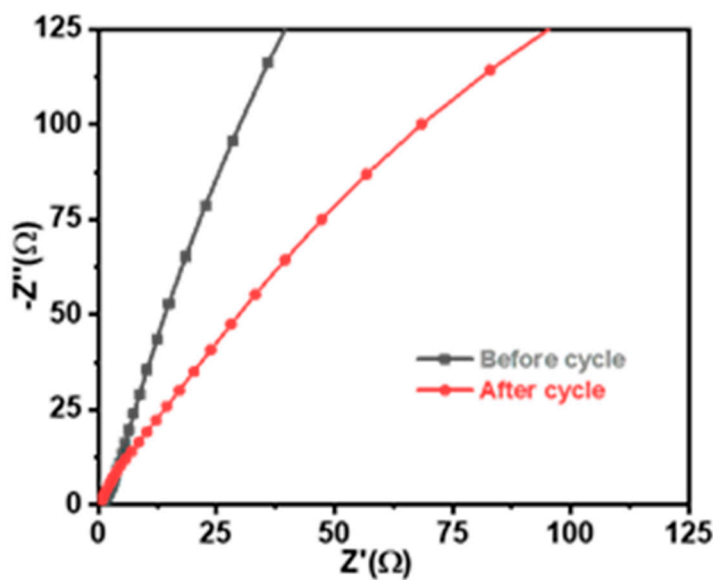
## **Materials and methods**

### **Fabrication of working electrode**

Ni-foam was cut into squares of  $1 \times 1 \text{ cm}^2$  in dimension, and it was first treated with 3 M HCl solution under ultrasonication for 30 min to remove any oxide film present on its surface. Again, it was treated with acetone, and ultrasonicated for 1 h in the water bath. Then the treated Ni-foam was washed with DI-water several times, followed by absolute alcohol to ensure the surface of Ni-foam was cleaned. Finally, the clean piece of Ni-foam was dried in vacuum oven at 60 °C for 6 h. The working electrode was fabricated with 4 mg of material mixture, where the as-prepared nanocomposite was taken as exactly 3.2 mg, 0.4 mg of activated carbon, and 0.4 mg of polyvinylidene fluoride (PVDF) in the mass ratios 80:10:10. The mixture content was poured in mortar, where N-methyl-2-pyrrolidone (NMP) was added and mixed thoroughly to make the homogenous slurry. All of this nanocomposite slurry was slowly drop cast over the surface of the cleaned Ni-foam substrate, and finally kept in the oven at 70 °C for 12 h.



**Figure S1.** Energy Dispersive Spectroscopy (EDS) analysis: (a) MoS<sub>2</sub>/Te hetero-composite, (b) Mo, (c) S, (d) Te, and (e) elemental spectrum and table for the elemental composition of the MoS<sub>2</sub>/Te nanocomposite.



**Figure S2.** EIS profile of MoS<sub>2</sub>/Te before and after the 4,000 cycles.