

Supporting Information

For

High-Performance Planar Zn-ion Micro-capacitors

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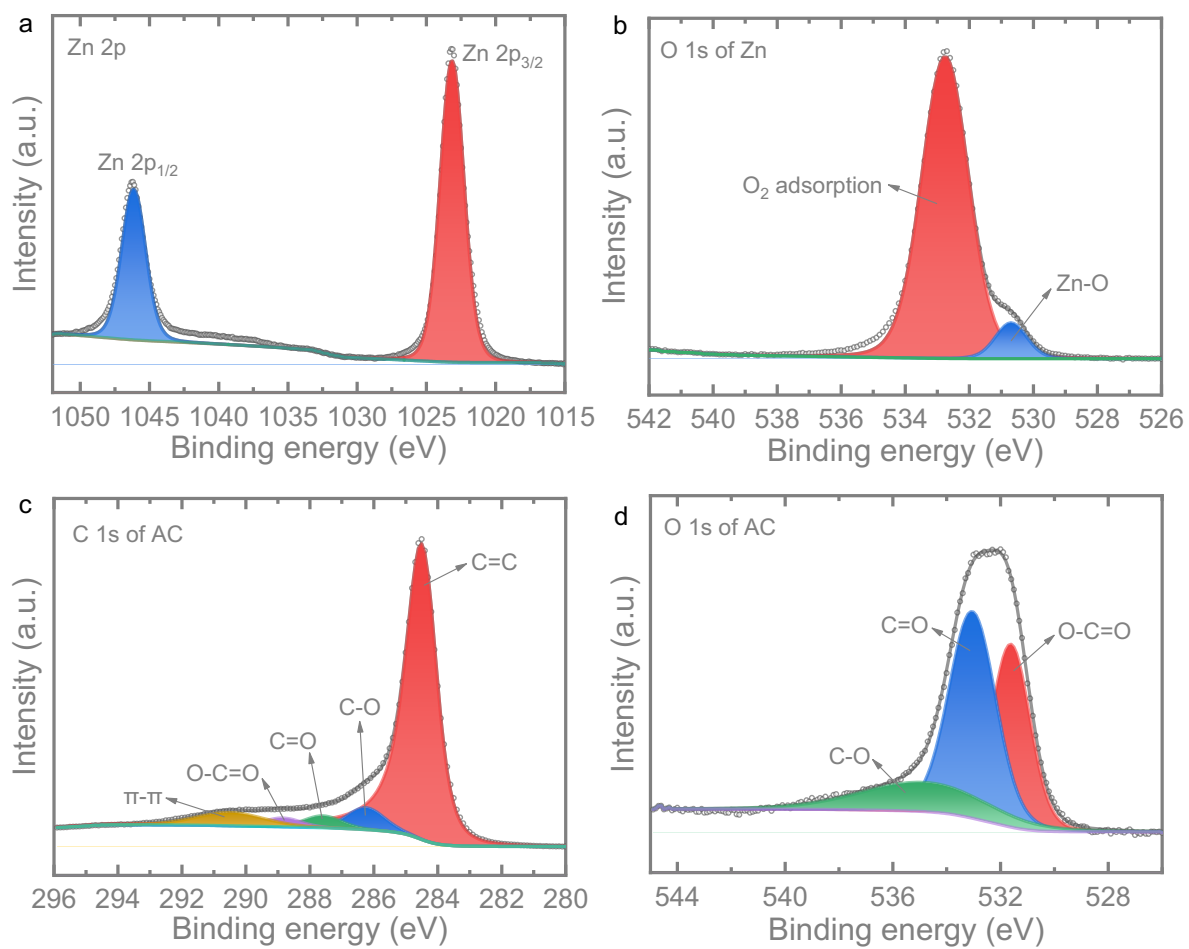


Figure S1. XPS spectra of (a) Zn 2p and (b) O 1s of Zn nanoparticles, (c) C 1s and (d) O 1s of AC powder.

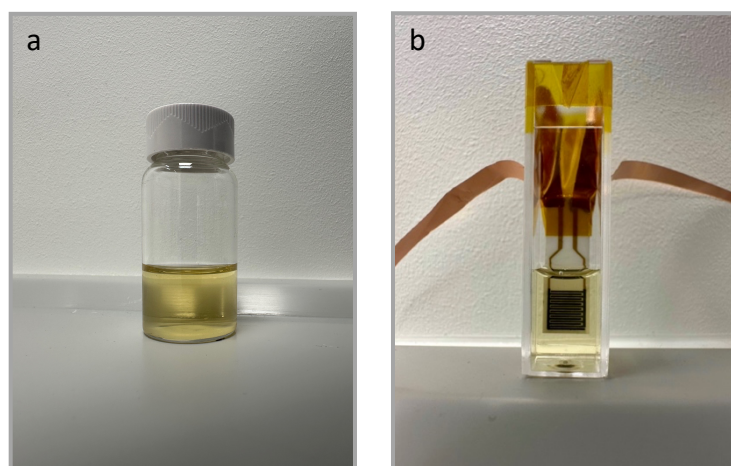


Figure S2. Digital Images depicting (a) the prepared ZnSO₄-gelatin electrolyte, and (b) the ZIMC being immersed directly into the electrolyte for testing.

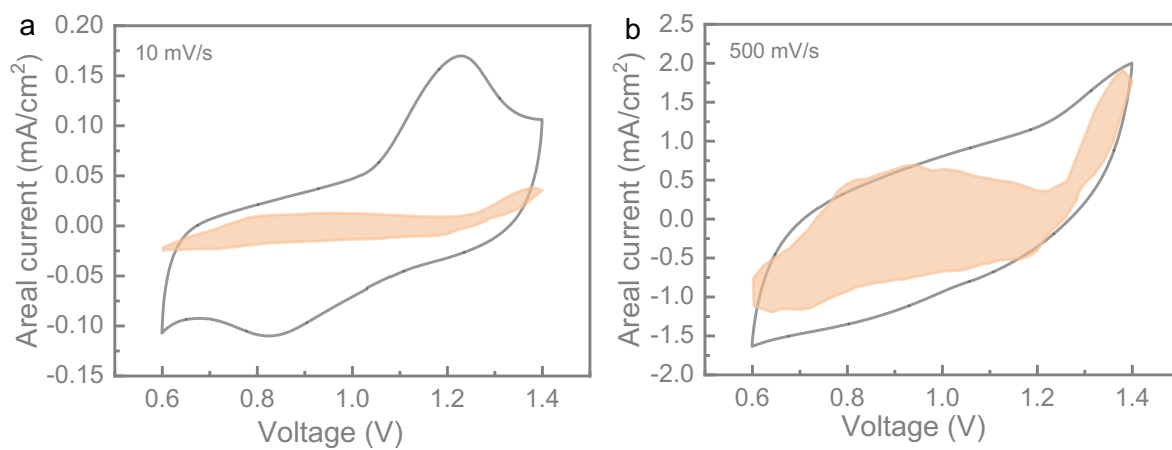


Figure S3. Capacitive contributions calculation at scan rates of (a) 10 mV/s and (b) 500 mV/s.

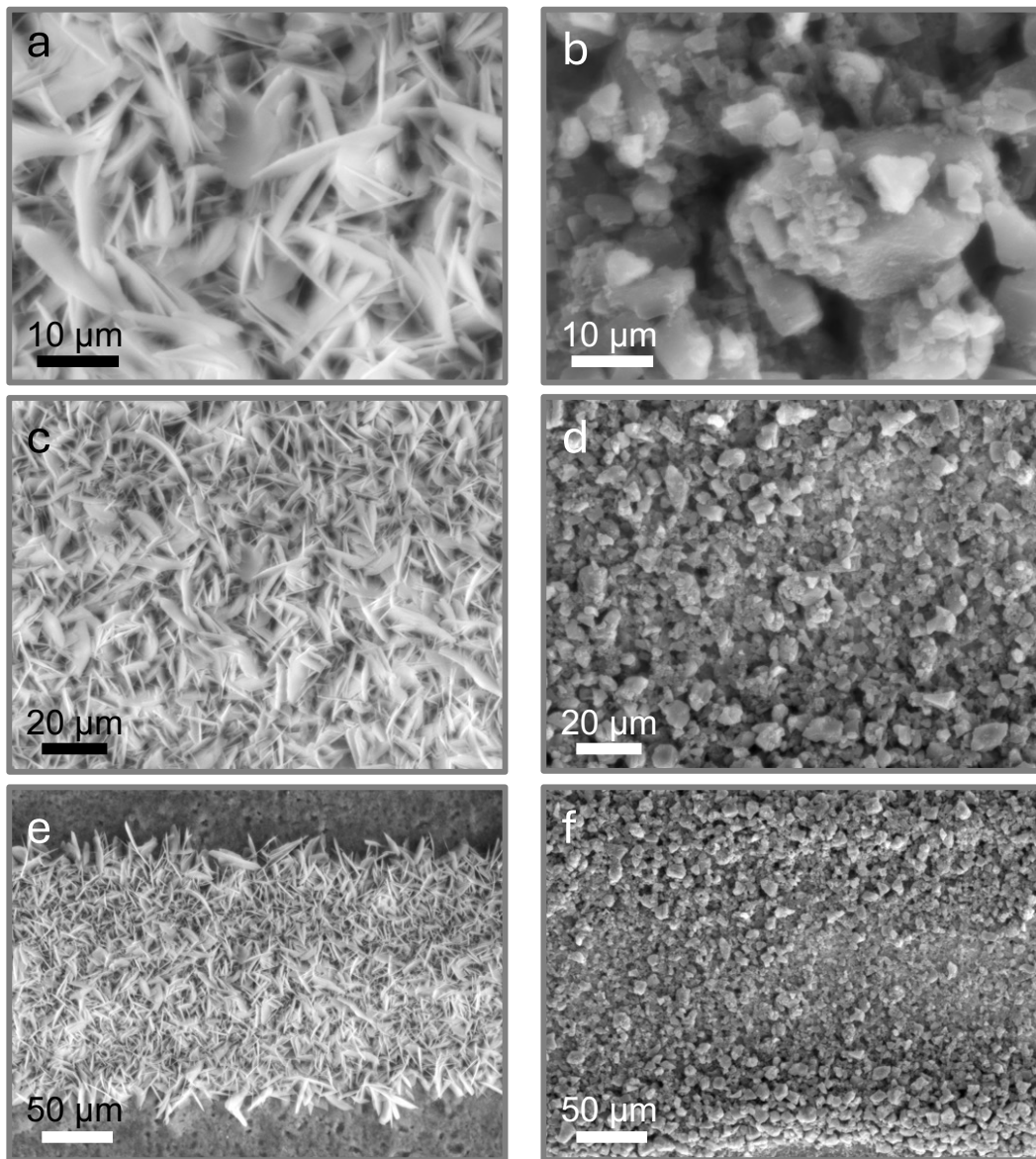


Figure S4. SEM images of (a, c, e) Zn and (b, d, f) AC at different magnifications of after 1000 cycled.

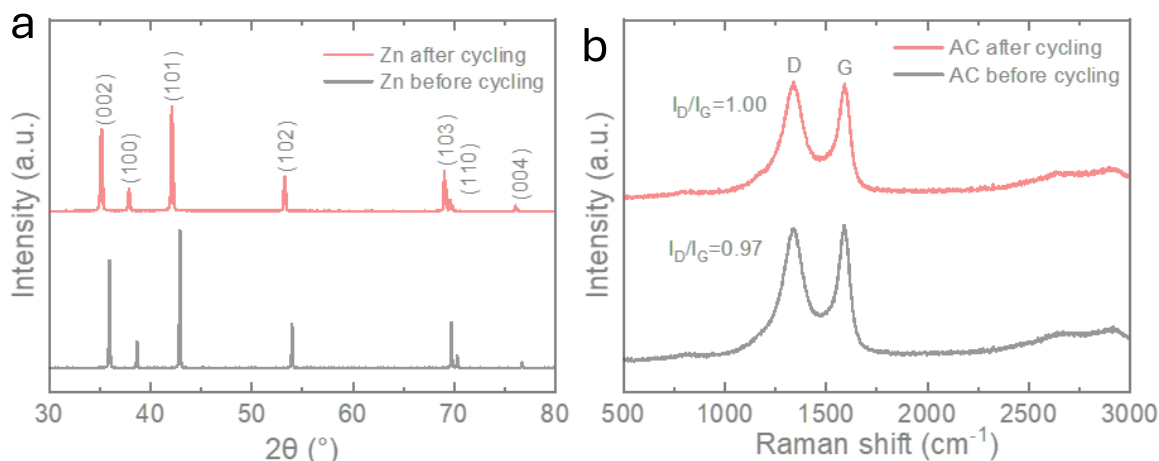


Figure S5. (a) XRD patterns of Zn foil before and after cycling, (b) Raman spectra of AC before and after cycling.

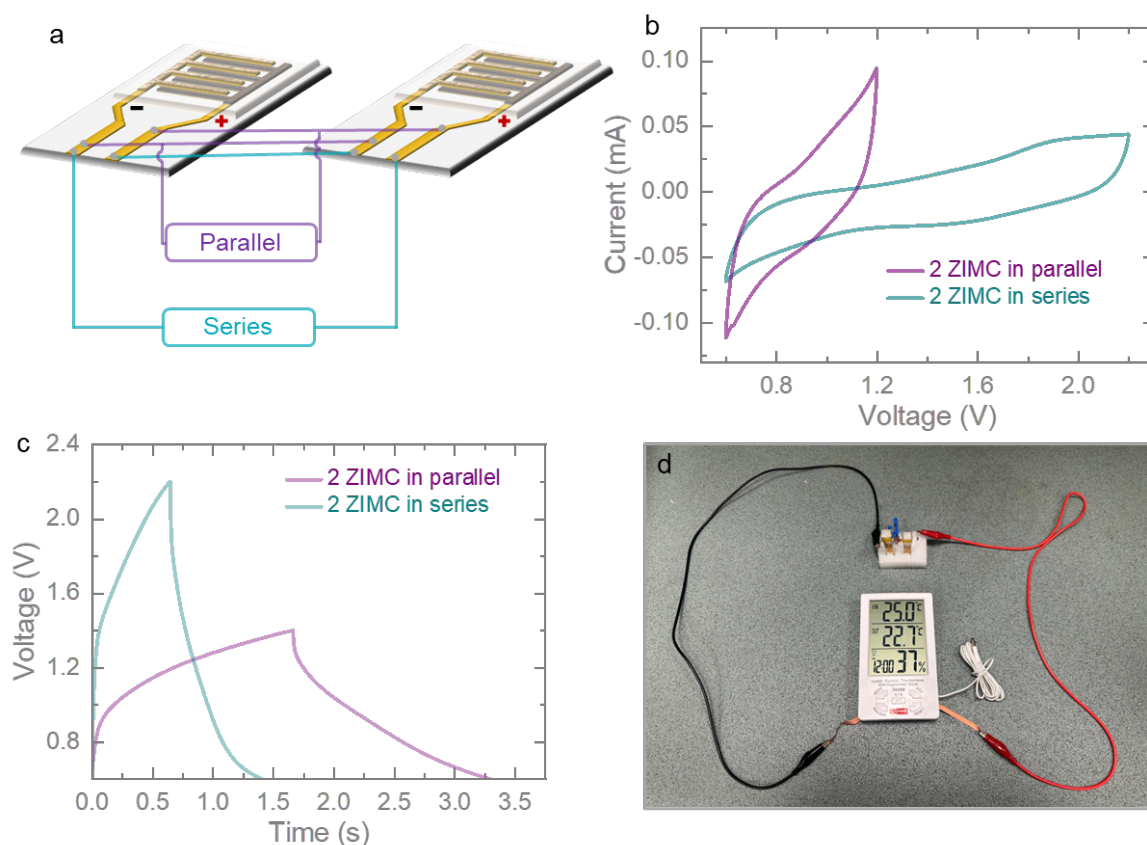


Figure S6. (a) A schematic depiction of connecting two ZIMCs in series and parallel to enhance output voltage and current. (b, c) CV and GCD profiles of the series and parallel configurations of two ZIMCs, showcasing the expansion of the operating voltage from 0.6 - 1.4 V to 0.6 - 2.2 V in the series configuration while increasing the current in parallel configuration. (d) A visual representation showing the use of two ZIMCs connected in series to power a device (Thermo Hygrometer).