

Supplementary information:

Poly(luminol)-Polyoxometalates Hybrid Hydrogels as Flexible and Soft Supercapacitor Electrodes

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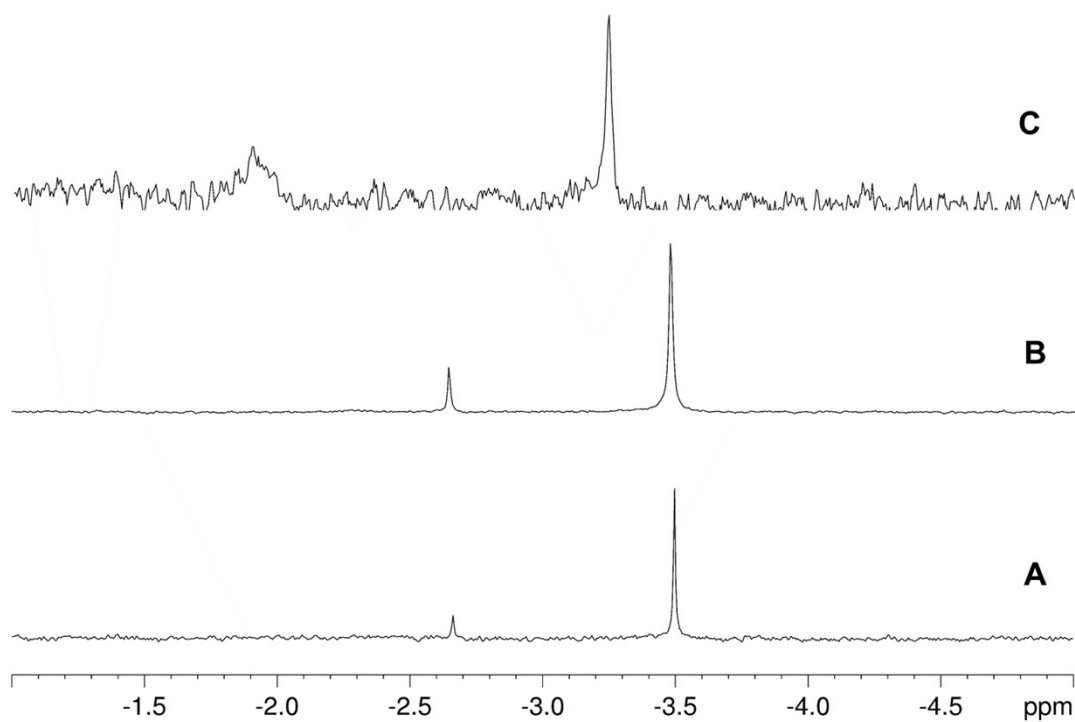


Figure S1: ³¹P-NMR Spectra for solutions of (A) Poms (B) mixture of Poms and luminol, and (C), and PLum-doped by Poms.

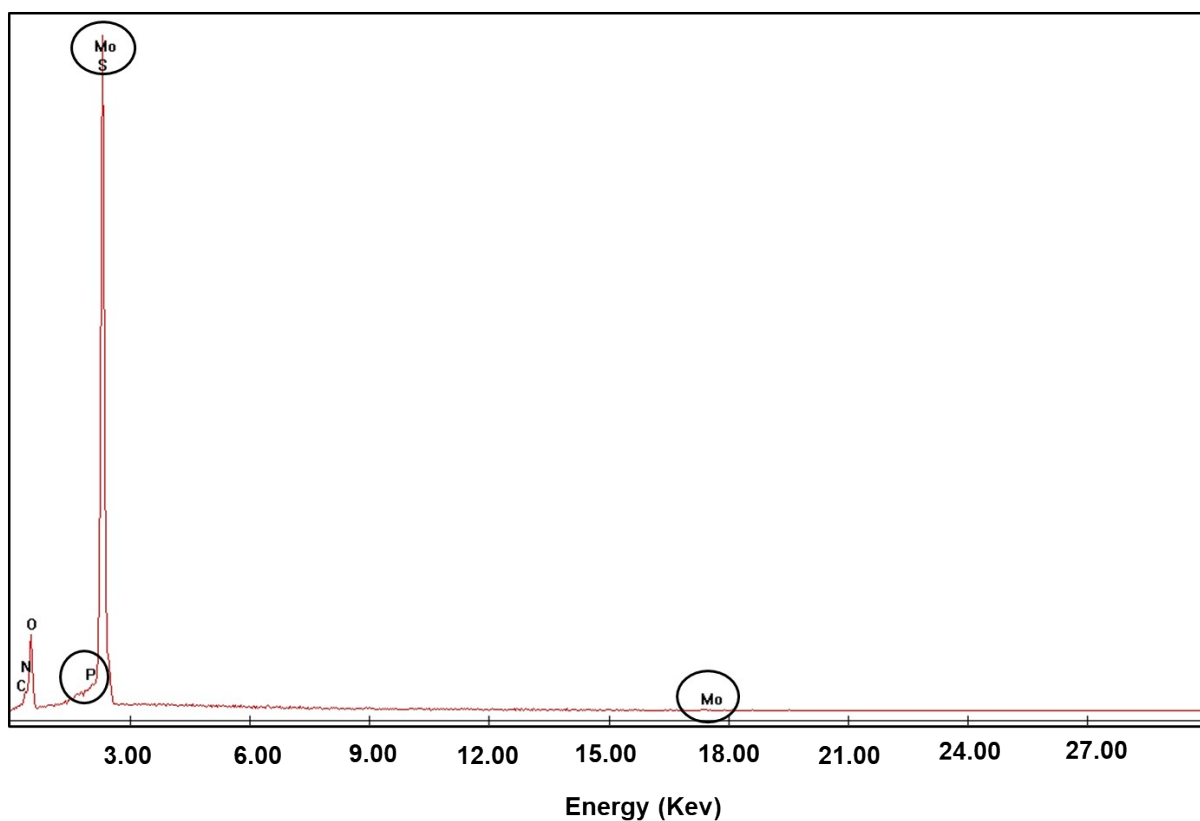


Figure S2: The energy-dispersive X-ray spectroscopy (EDX) of the hybrid hydrogel.

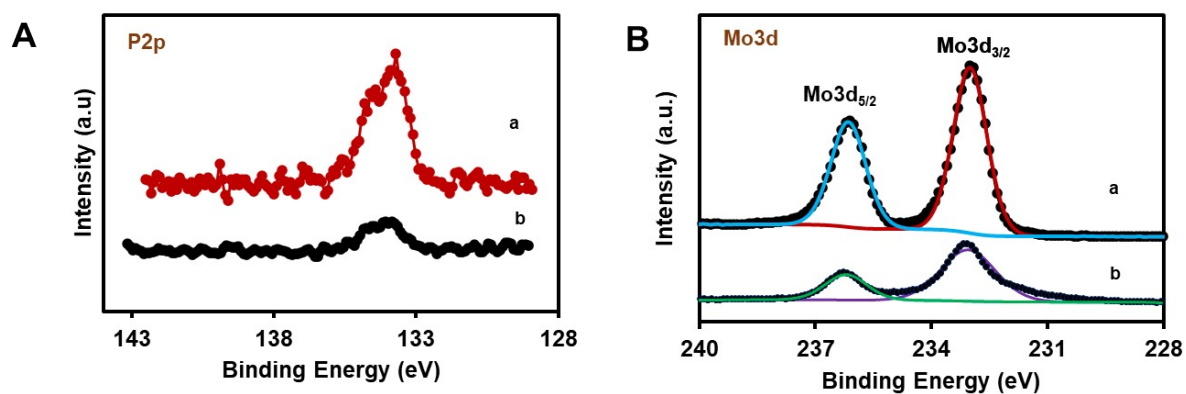


Figure S3: High-resolution XPS of P 2p (A), and Mo 3d (B) of (a) PLum hydrogel and (b) pure phosphomolybdic acid.

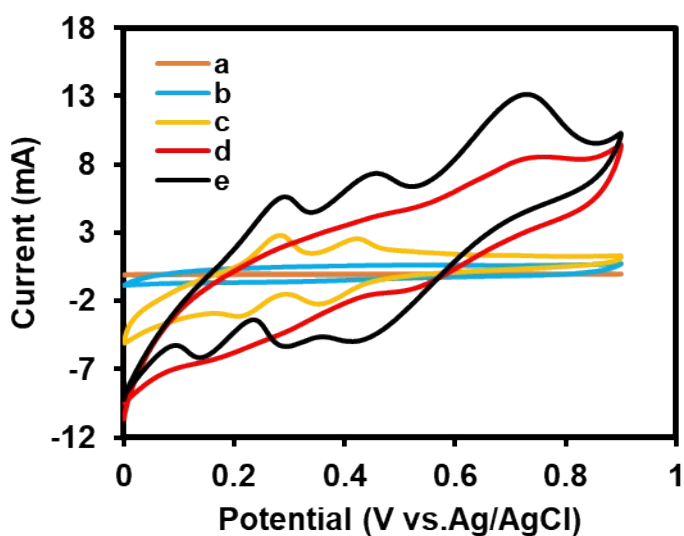


Fig S4: Cyclic voltammograms of: (a) CFC, (b) CFC/PAM/SA, (c) CFC/PAM/SA- Poms, (d) PLum electrode and (e) hybrid PAM/SA-PLum/Poms electrode, at scan rate of 10 mV s^{-1} in $1 \text{ M H}_2\text{SO}_4(\text{aq})$.

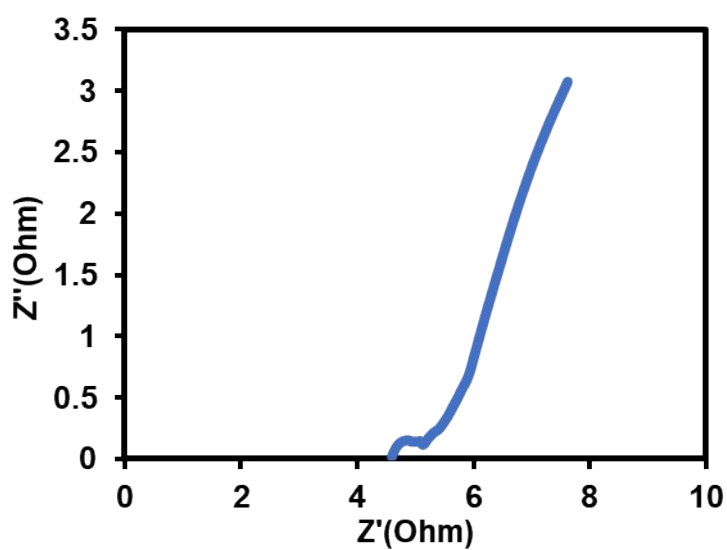


Figure S5: Nyquist plots of the hybrid hydrogel electrode (CFC/PAM/SA/PLum/Poms) in a frequency range of 0.1 Hz – 100 kHz

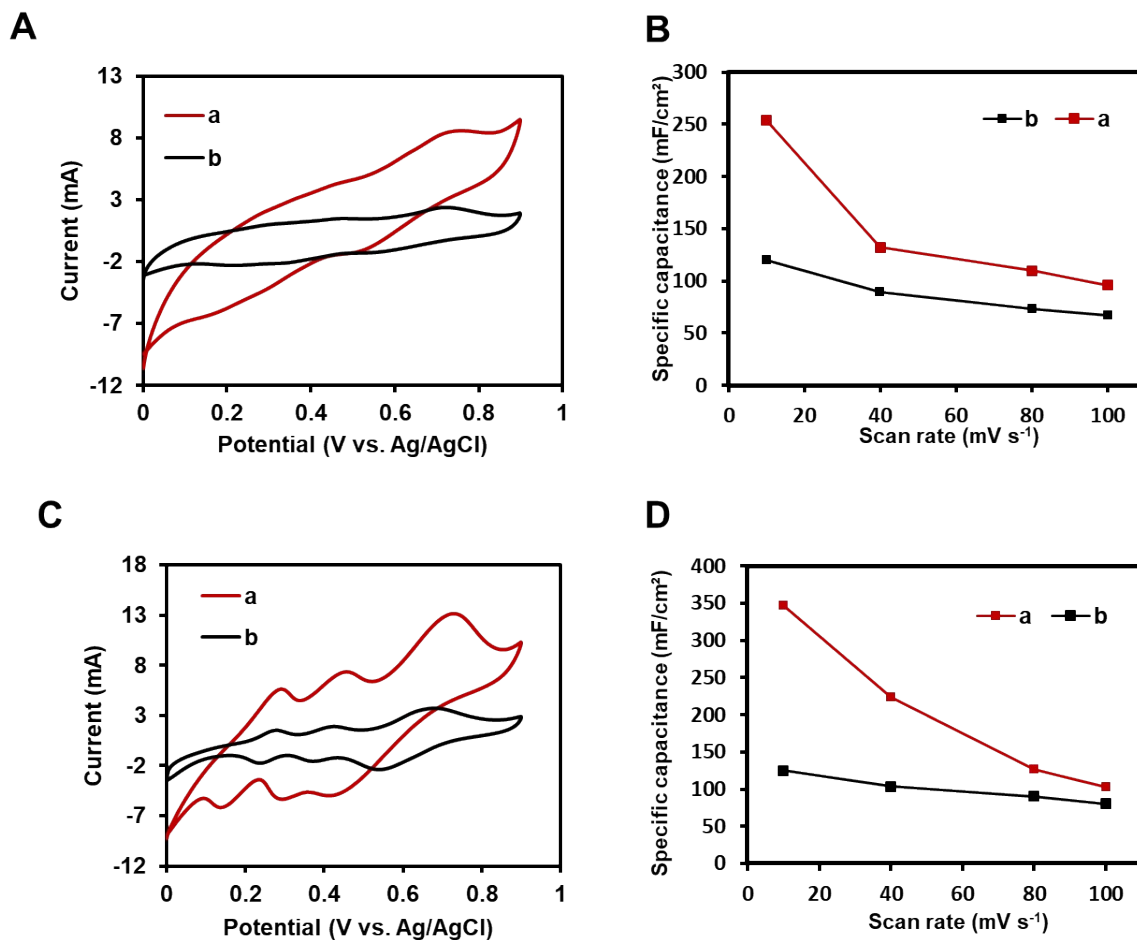


Figure S6. (A) Cyclic voltammograms of (a) PLum hydrogel electrode (CFC/PAM/SA/PLum) and (b) CFC-supported PLum electrode in 1M H₂SO₄ solution at 10 mVs⁻¹; (B) Specific capacitance at different scanning rates of (a) PLum hydrogel electrode and (b) CFC-supported PLum electrode in 1M H₂SO₄ solution at 10 mVs⁻¹; (C) Cyclic voltammograms of (a) hybrid hydrogel electrode (CFC/PAM/SA/PLum/Poms) and (b) CFC-supported PLum/Poms electrode in 1 M H₂SO₄ solution at 10 mV⁻¹; (D) Specific capacitance plots at different scanning rates of (a) hybrid hydrogel electrode and (b) CFC-supported PLum/Poms electrode.

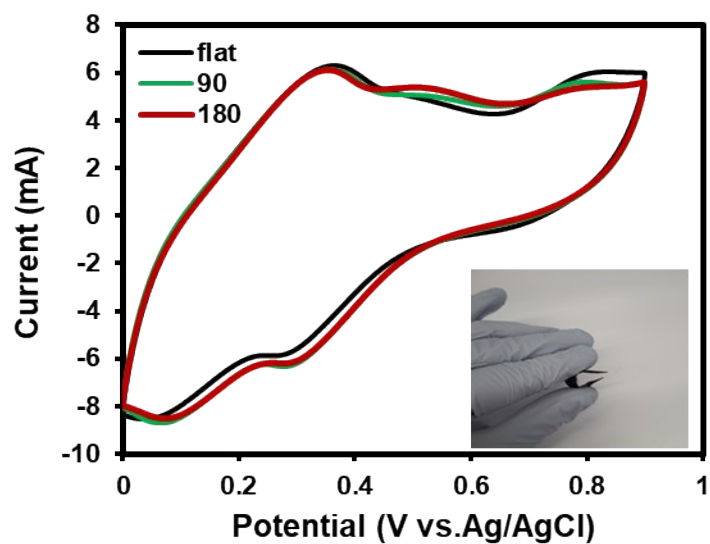


Figure S7. Cyclic voltammograms of the flaxible supercapacitor at different bending angles (0° , 90° and 180°) at a constant scan rate of 40 mV cm^{-1} . Inset: optical photograph of the fabricated flexible device in a bended state.