

Supporting Information

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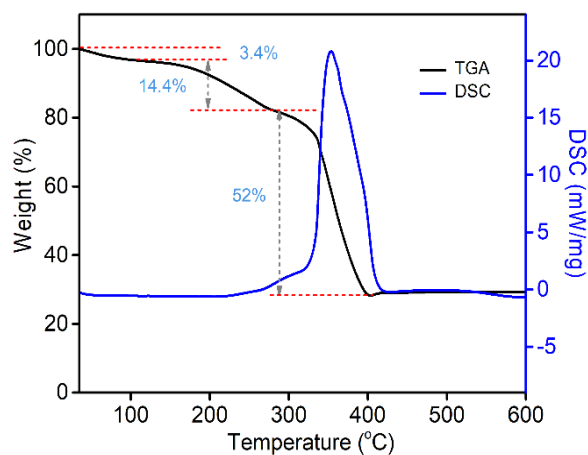


Figure S1: TGA and DSC data for V-MOF

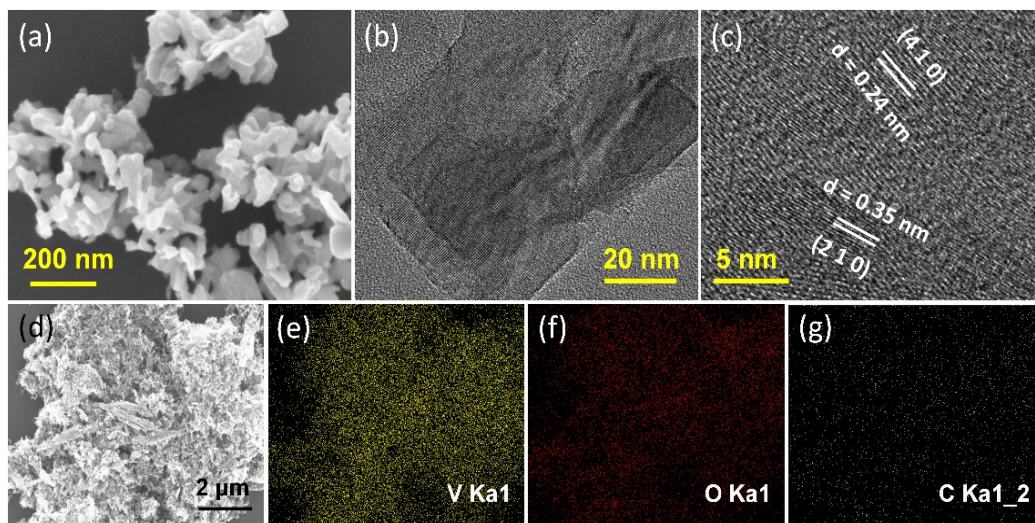


Figure S2: SEM, TEM and EDX mapping data for V_2O_5 -2 sample

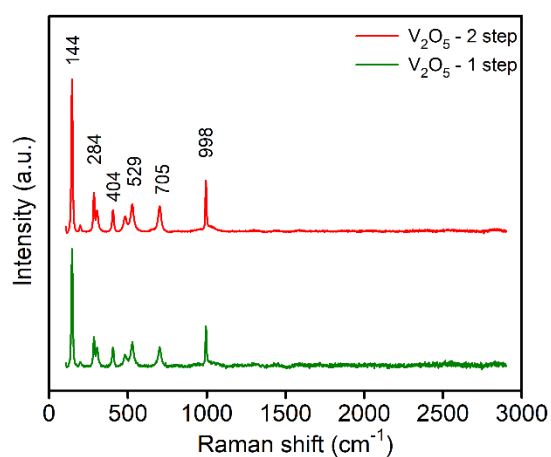


Figure S3: Raman data for both V_2O_5 samples

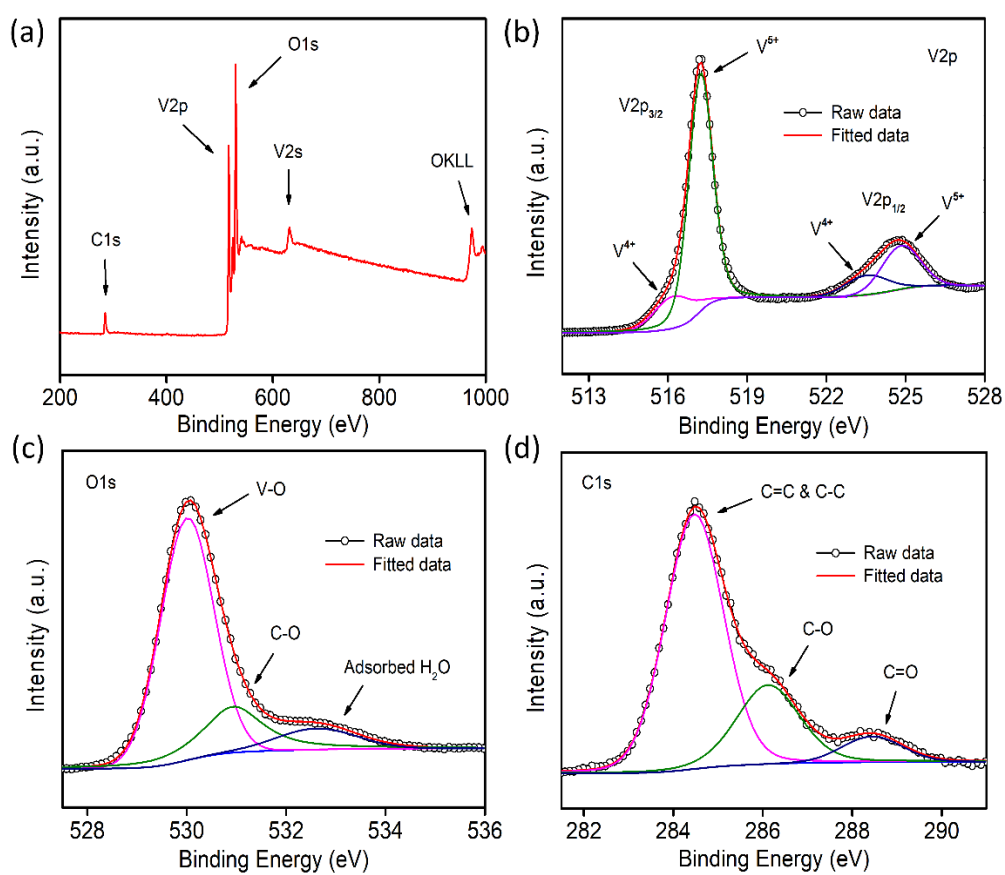


Figure S4: XPS data including survey spectra and the deconvoluted spectra of V_2O_5 -2 sample

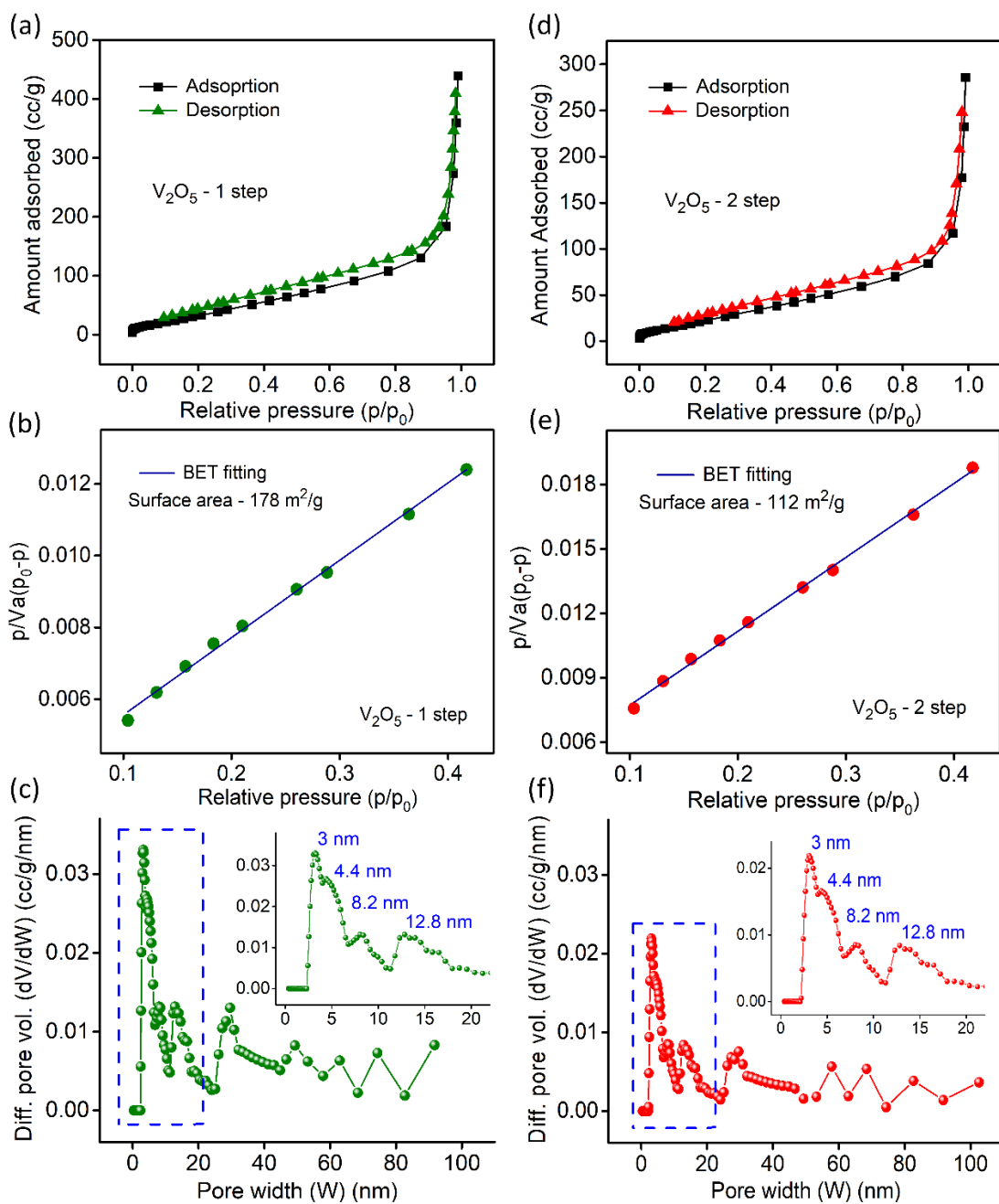


Figure S5: N₂ gas adsorption isotherm at 77 K, BET fitting data and NLDFT pore size distribution data for (a)-(c) V₂O₅-2 and (d)-(f) V₂O₅-1 samples

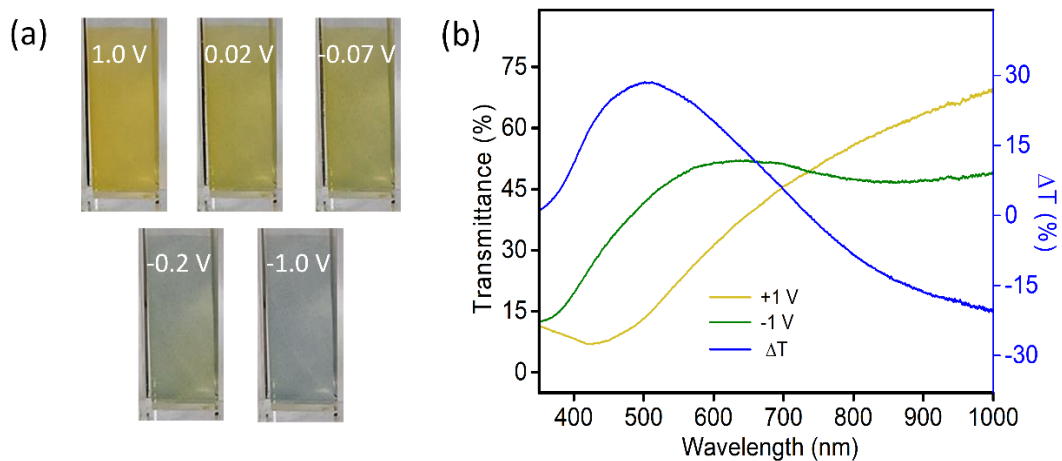


Figure S6: (a) Photographs of V₂O₅-1 electrode at different potentials, (b) Transmission and optical modulation spectra of V₂O₅-2 electrode in 3-electrode set-up

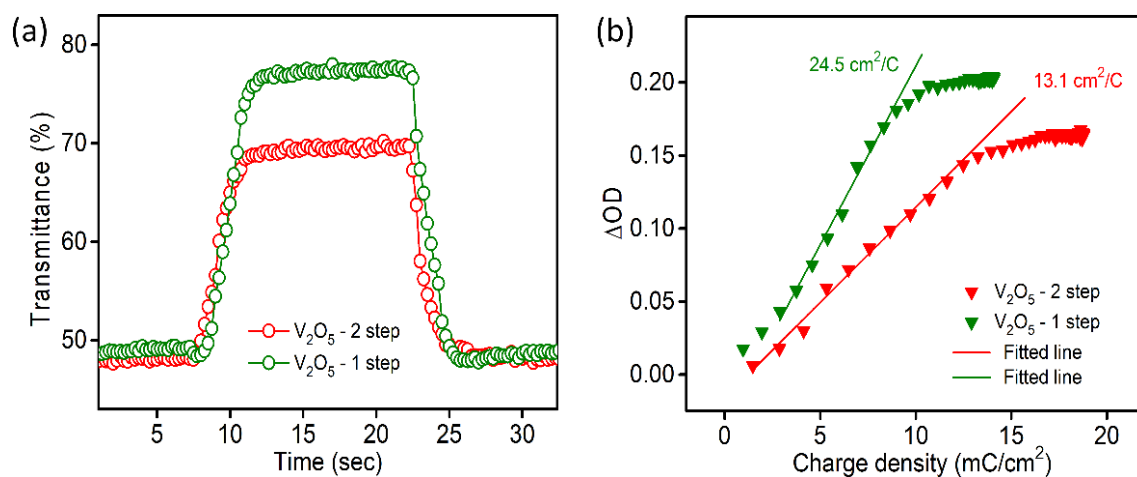


Figure S7: (a) Switching times and (b) coloration efficiencies at 1000 nm for both samples

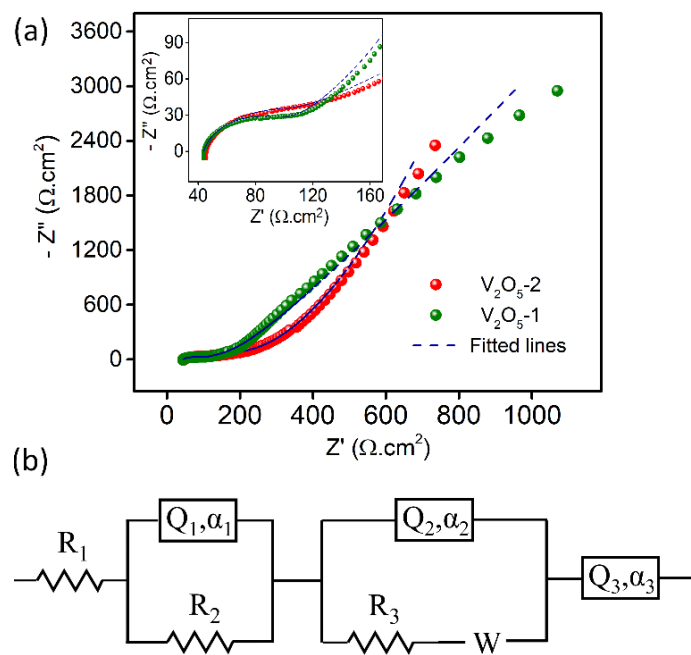


Figure S8: (a) Nyquist plots of the samples, (b) equivalent circuit diagram

Table S1: Comparison of resistance values obtained from modelling the Nyquist plots

Films	R_1 (Ωcm^2)	R_2 (Ωcm^2)	R_3 (Ωcm^2)	Measurement error (%)
V_2O_5 -1	43.87	50.2	58.1	< 3.31
V_2O_5 -2	45.31	97.1	60.3	< 2.95

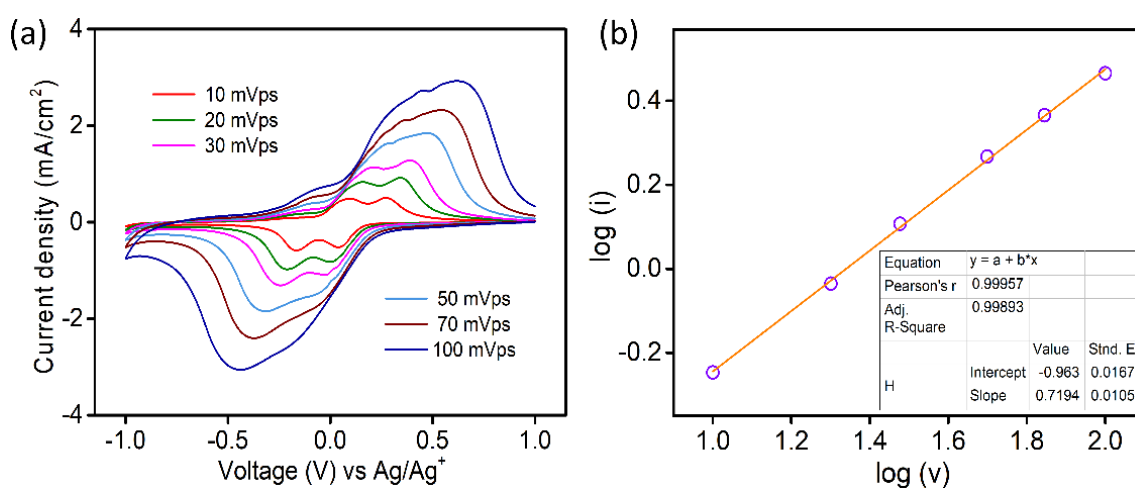


Figure S9: (a) Scan rate dependent CV data and (b) $\log(i)$ vs $\log(v)$ plots for V_2O_5 -2 electrode

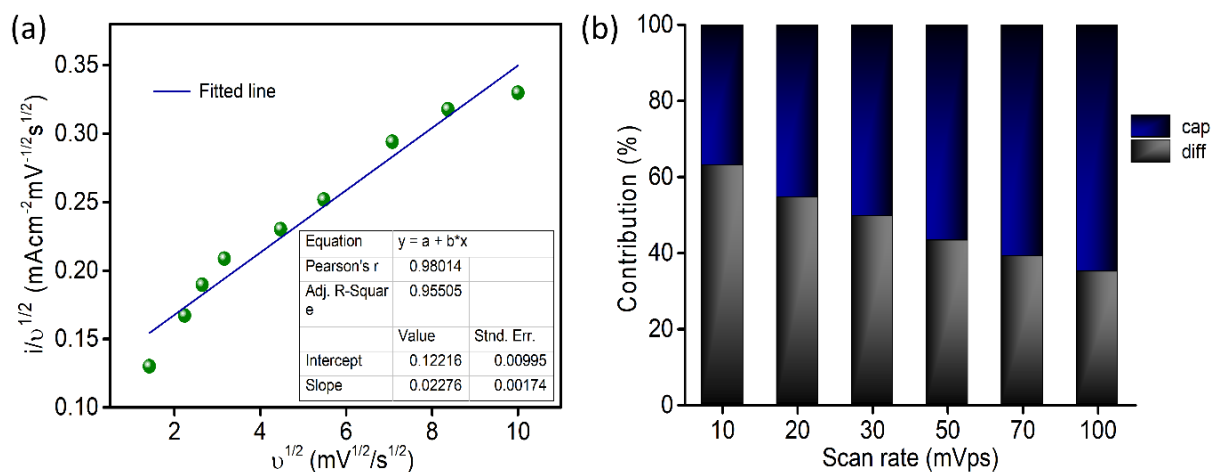


Figure S10: (a) $i/v^{1/2}$ vs $v^{1/2}$ plot for V_2O_5 -1 electrode and (d) histogram plot shows the decoupling of current contributions with scan rate

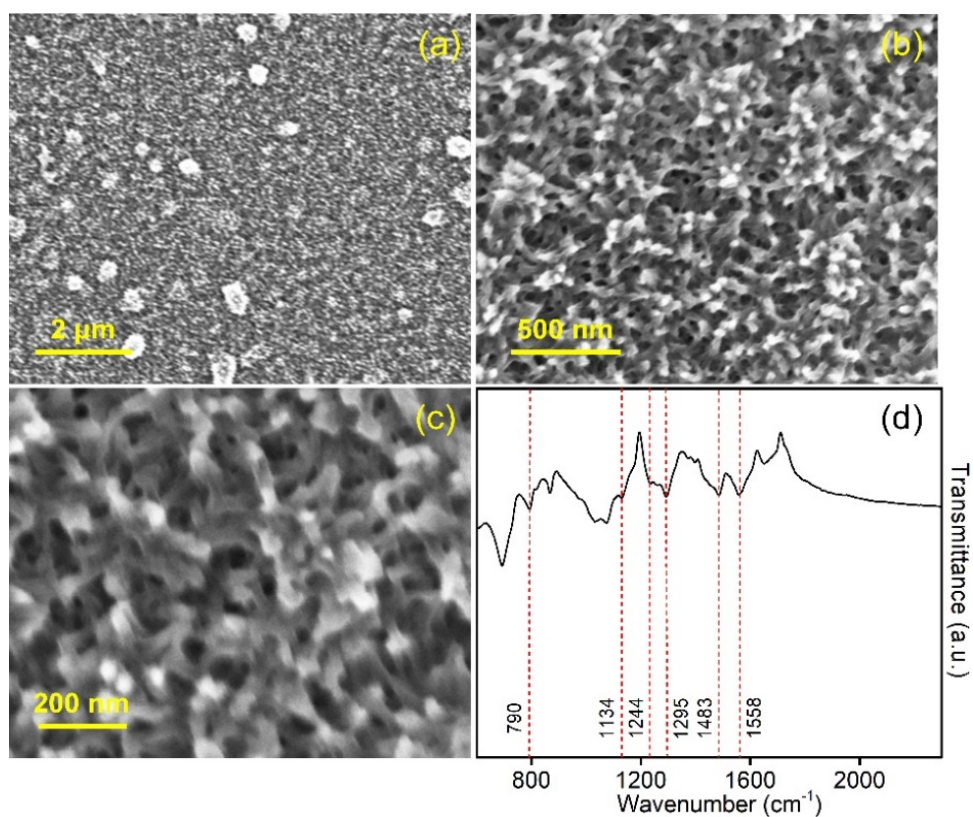


Figure S11: (a)-(c) FESEM images and (d) ATR-FTIR data of as-deposited PANI film

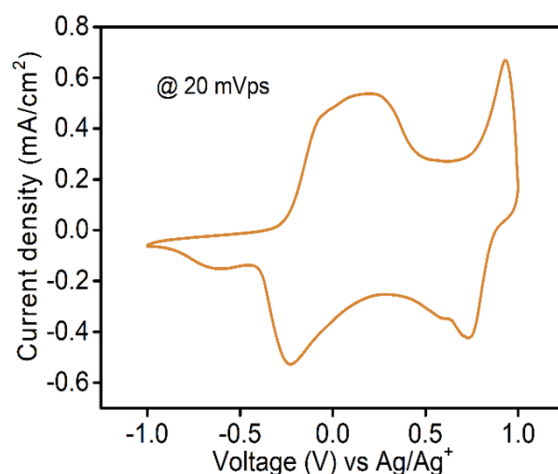


Figure S12: CV of PANI film in three-electrode set-up at 20 mVps scan rate in 1 M LiClO₄/PC electrolyte

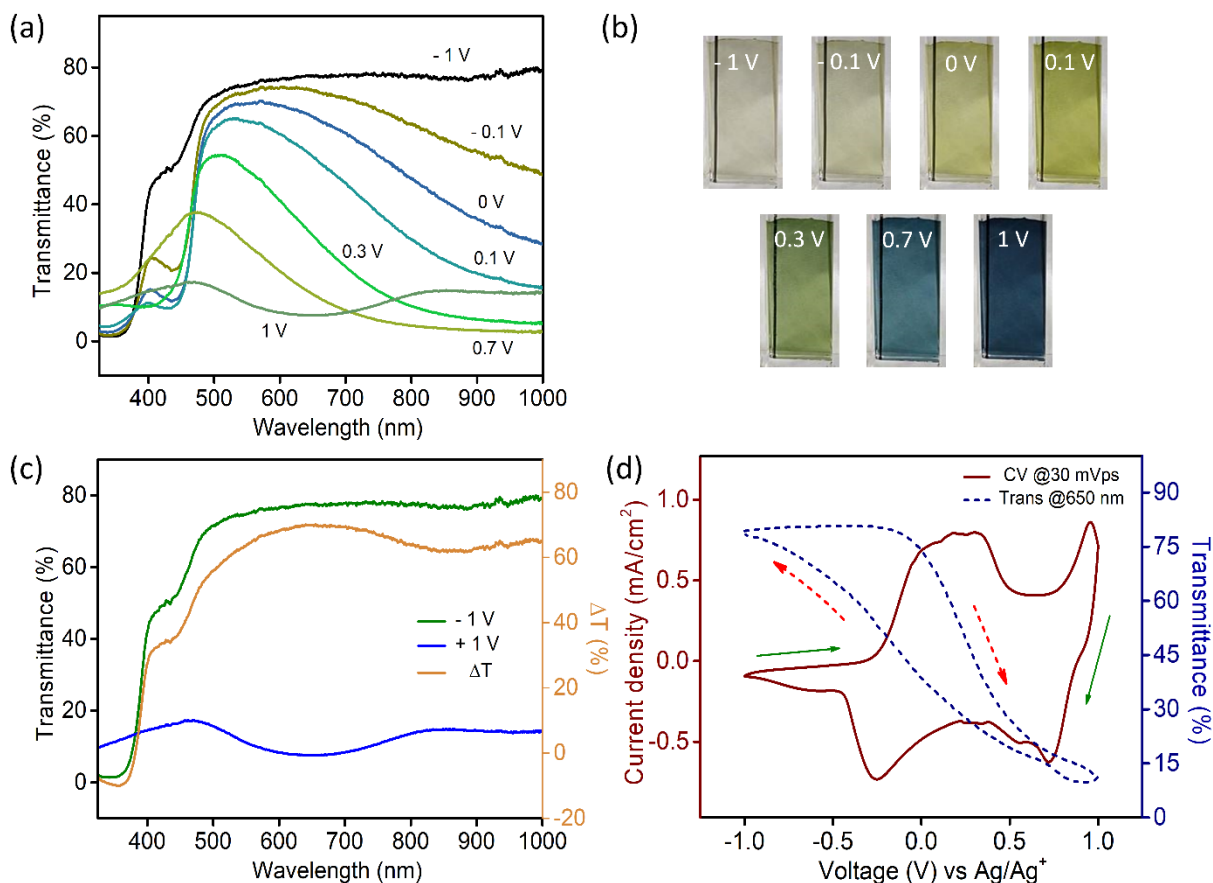


Figure S13: (a) Transmission spectra and (b) digital photographs of PANI electrodes at different applied biases, (c) Transmission data at +1 V and -1 V along with the optical modulation spectra (orange curve); (d) CV data of PANI film (wine curve) at 50 mV/s scan rate as well as the in-situ change in transmission at 650 nm (blue dotted line).

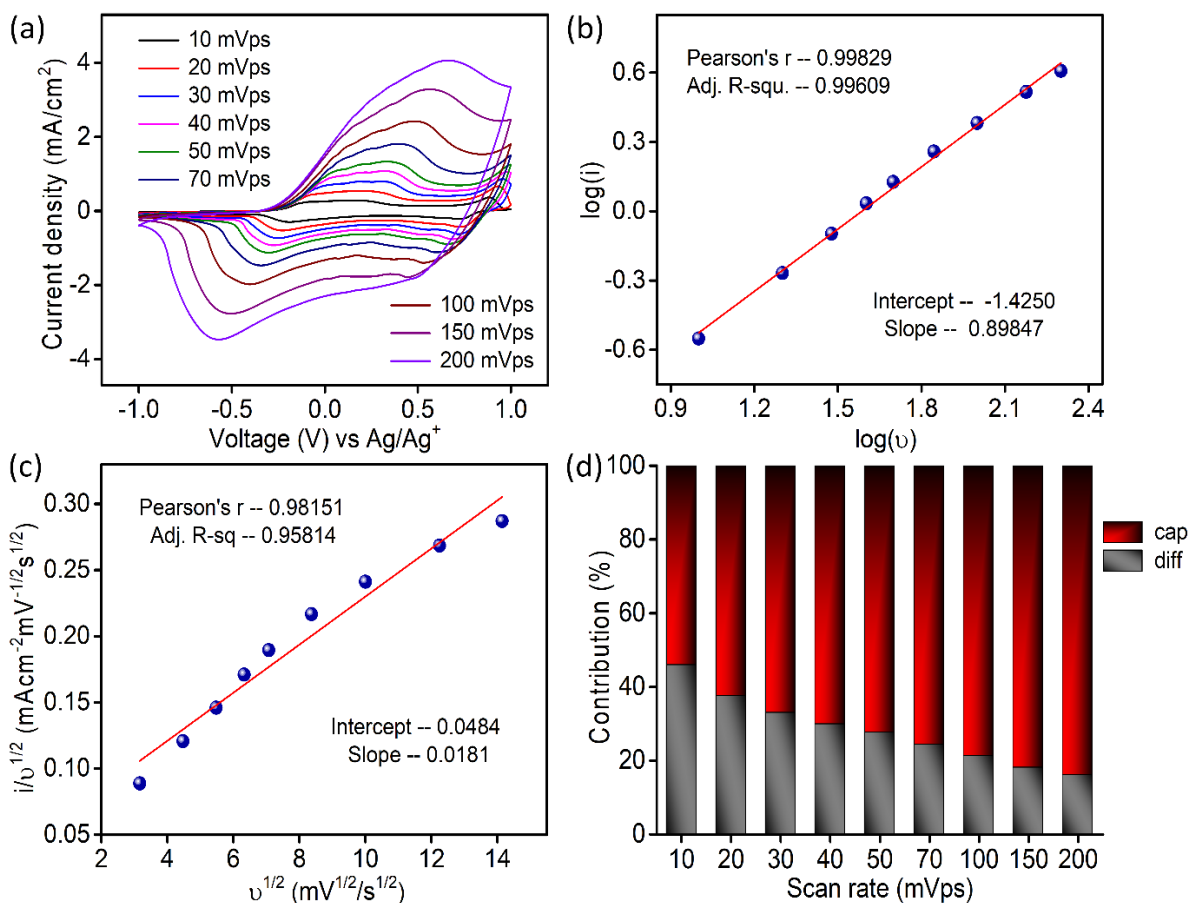


Figure S14: (a) Scan rate dependent CV data for PANI electrode, (b) $\log(i)$ vs $\log(v)$ plot, (c) $i/v^{1/2}$ vs $v^{1/2}$ plot and (d) deconvoluting current contributions with scan rate

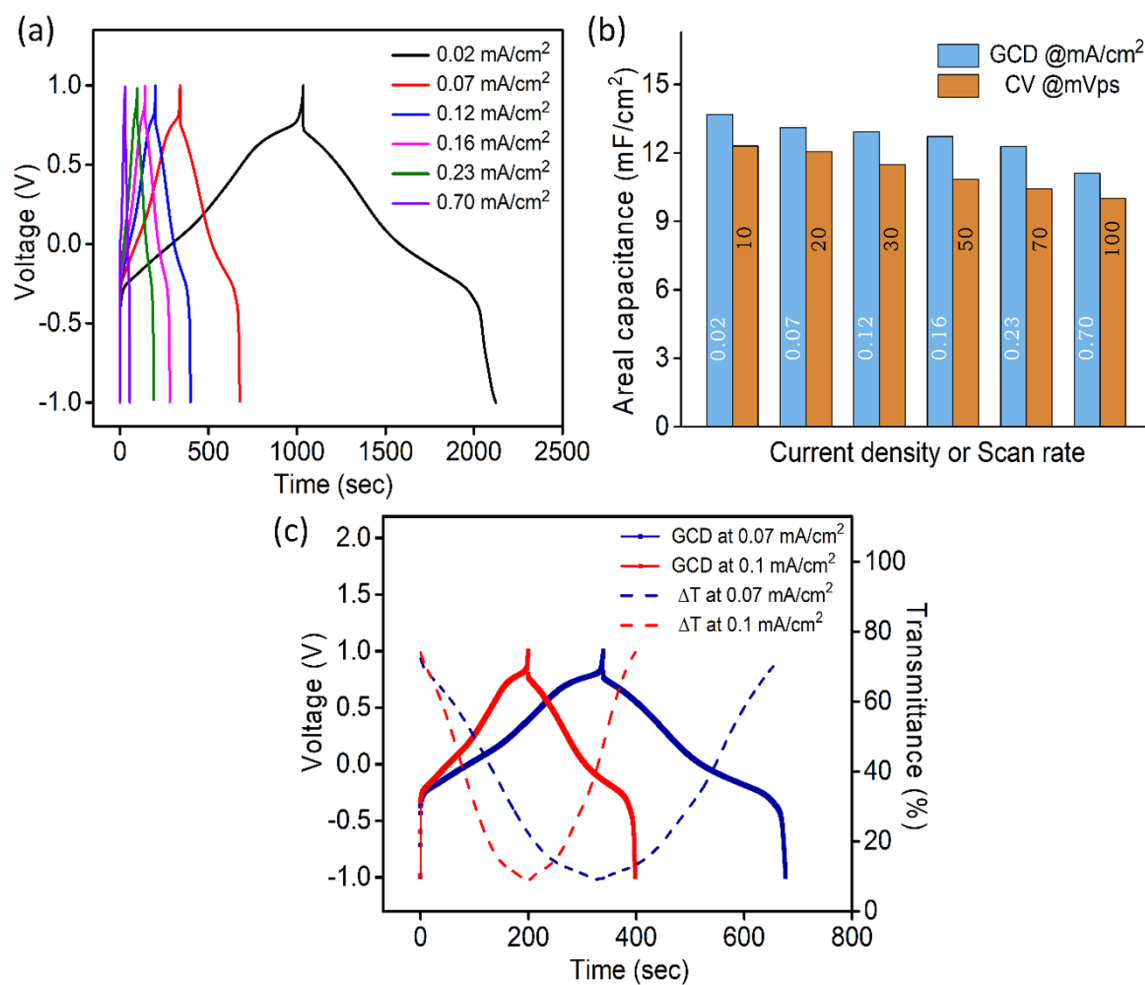


Figure S15: (a) GCD curves at different current densities; (b) comparison of areal specific capacitance values obtained from CV and GCD data; (c) in-situ change in transmittance at 650 nm synced with GCD curves at different current densities.

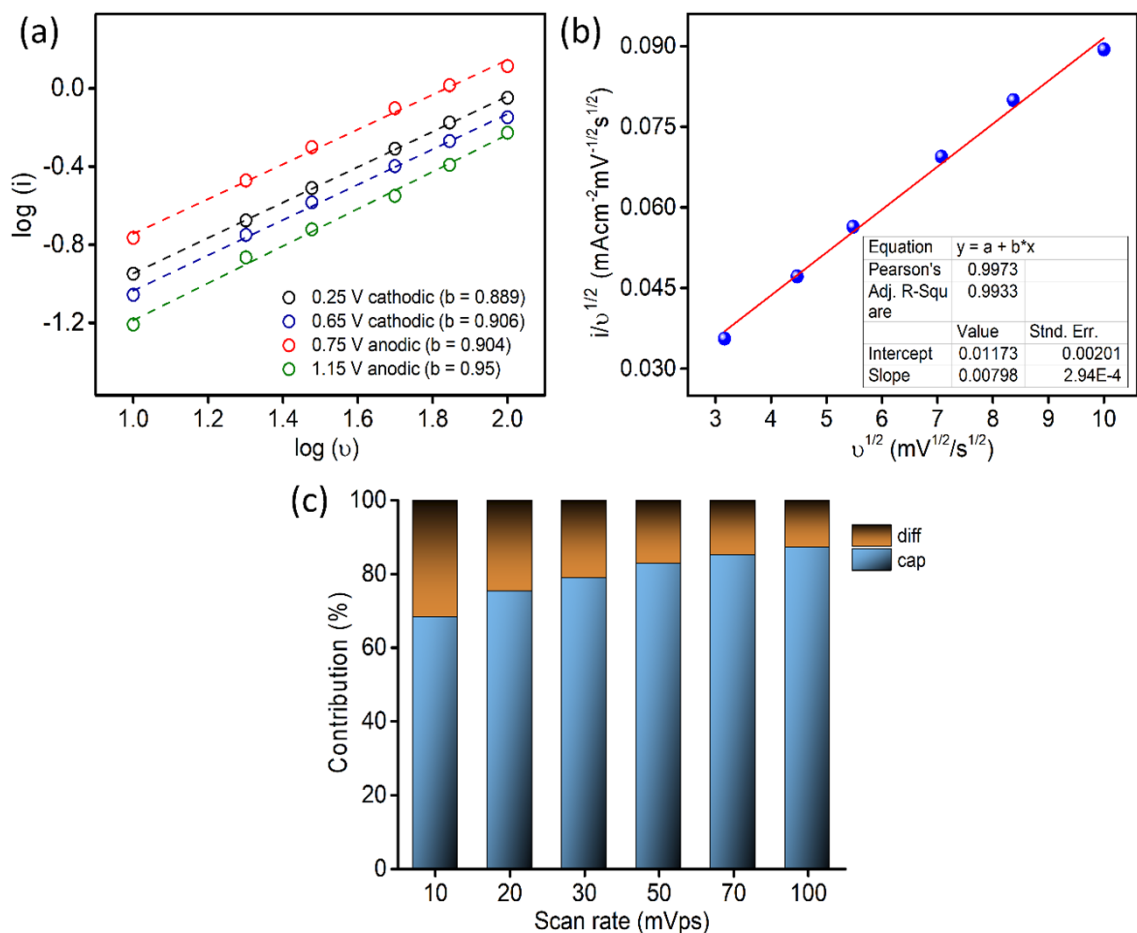


Figure S16: (a) $\log(i)$ vs $\log(v)$ plot for ASC system at different voltages, (b) $i/v^{1/2}$ vs $v^{1/2}$ graph, (c) separating the current contributions at different scan rates

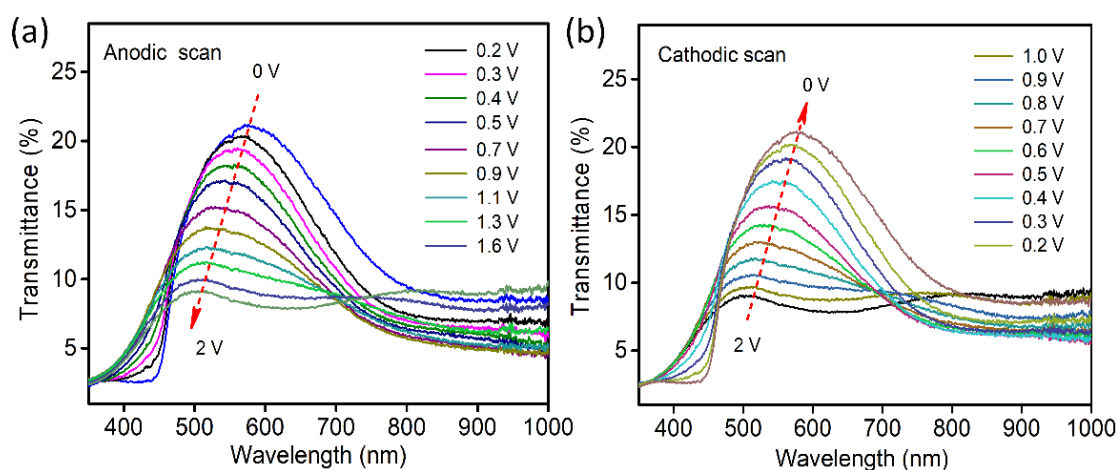


Figure S17: Gradual change in transmission spectra of MECASC during (a) anodic and (b) cathodic scan

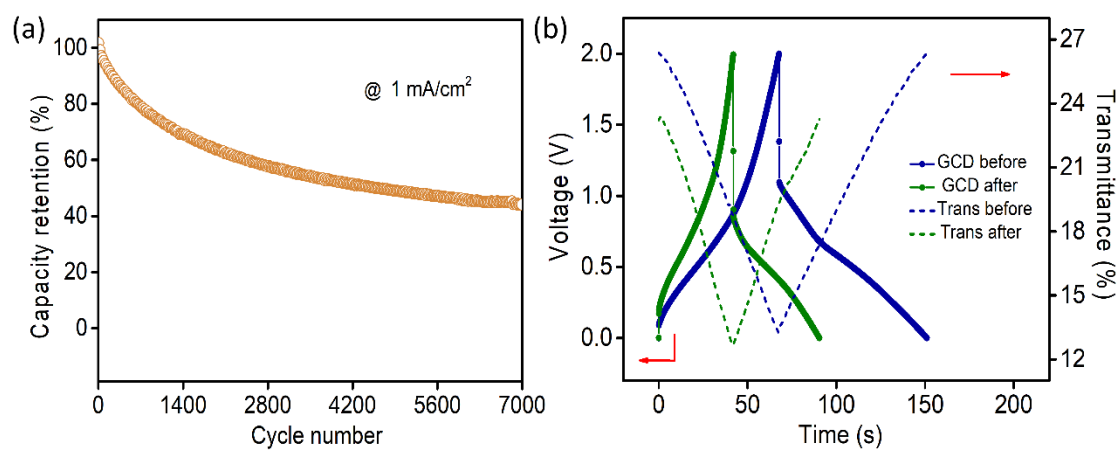


Figure S18: (a) Cycling performance of MECASC up to 7000 cycles; (b) GCD profiles of the system at 0.12 mA/cm^2 and dynamic in-situ transmission modulations at 580 nm before and after cycling

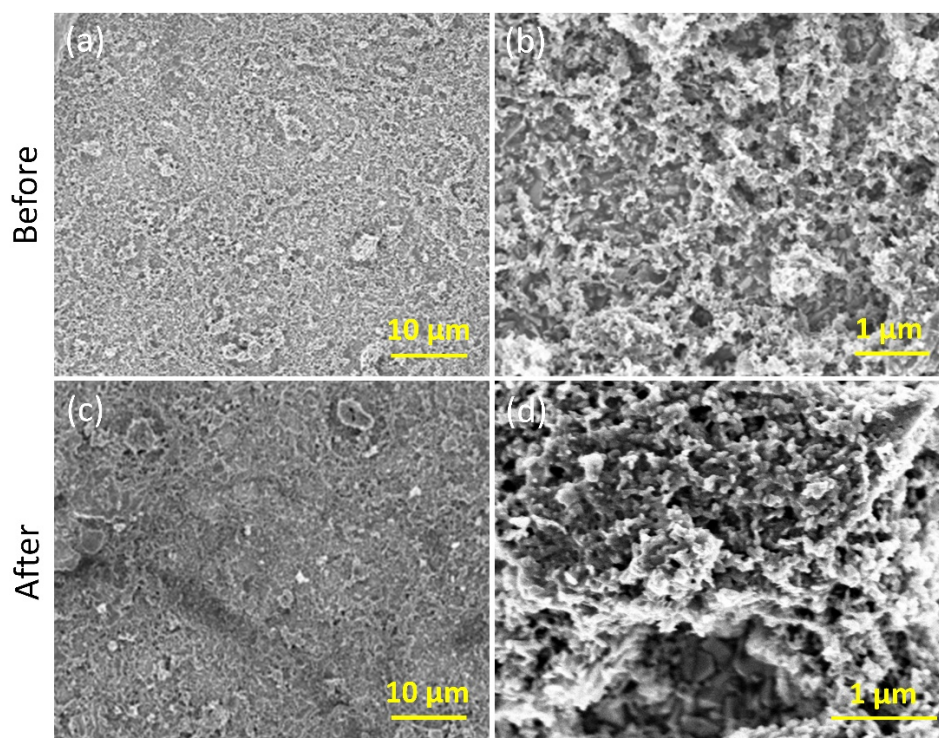


Figure S19: Morphology of V_2O_5 films before (a)-(b) and after (c)-(d) cycling in 2-electrode system at different magnifications

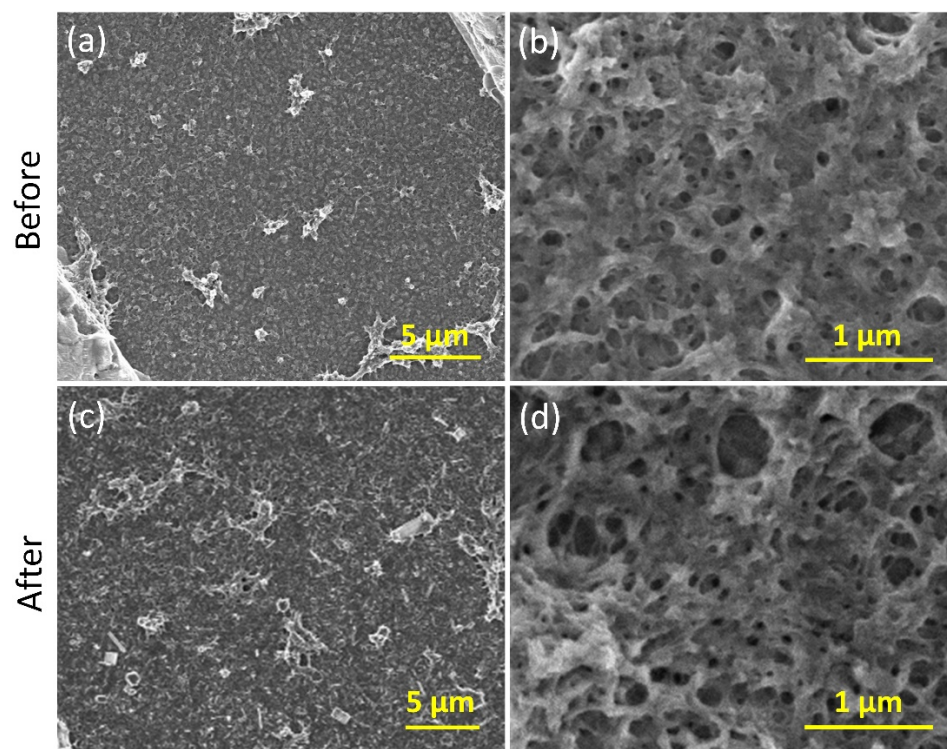


Figure S20: Morphology of PANI films before (a)-(b) and after (c)-(d) cycling in 2-electrode system at different magnifications