

Supporting Information

Novel Magnetic Flowable Electrode for Redox Flow Batteries: A Polysulfide/Iodide Case Study

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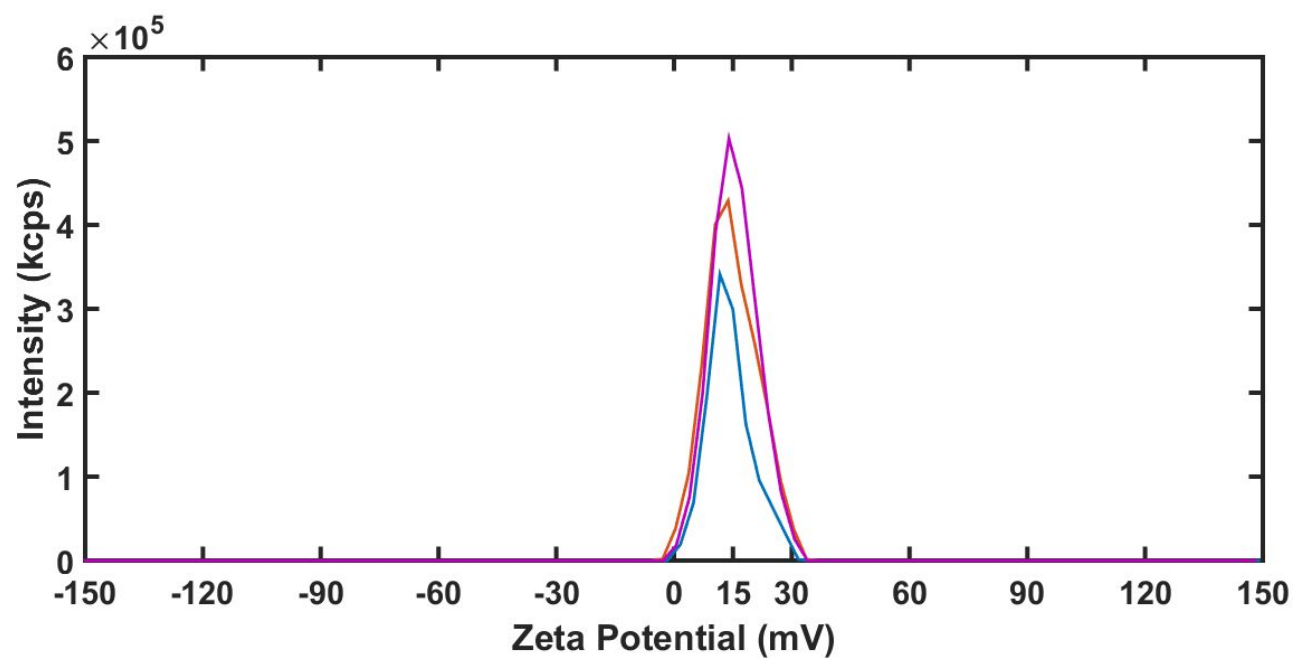


Fig. S1. Three separate measurements of the zeta potential distribution of the magnetic modified multi-wall carbon nanotubes (mass concentration: $20 \mu\text{g cm}^{-3}$) in 10 mM KI.

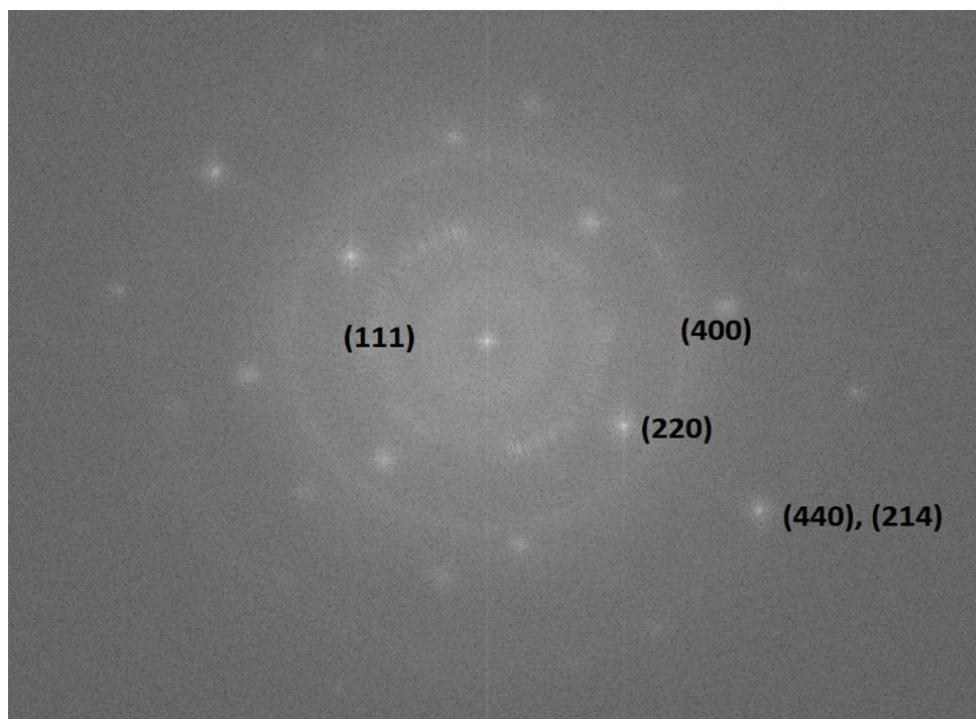


Fig. S2. Fast Fourier transform (FFT) pattern of HRTEM image shown in Figure 2c.

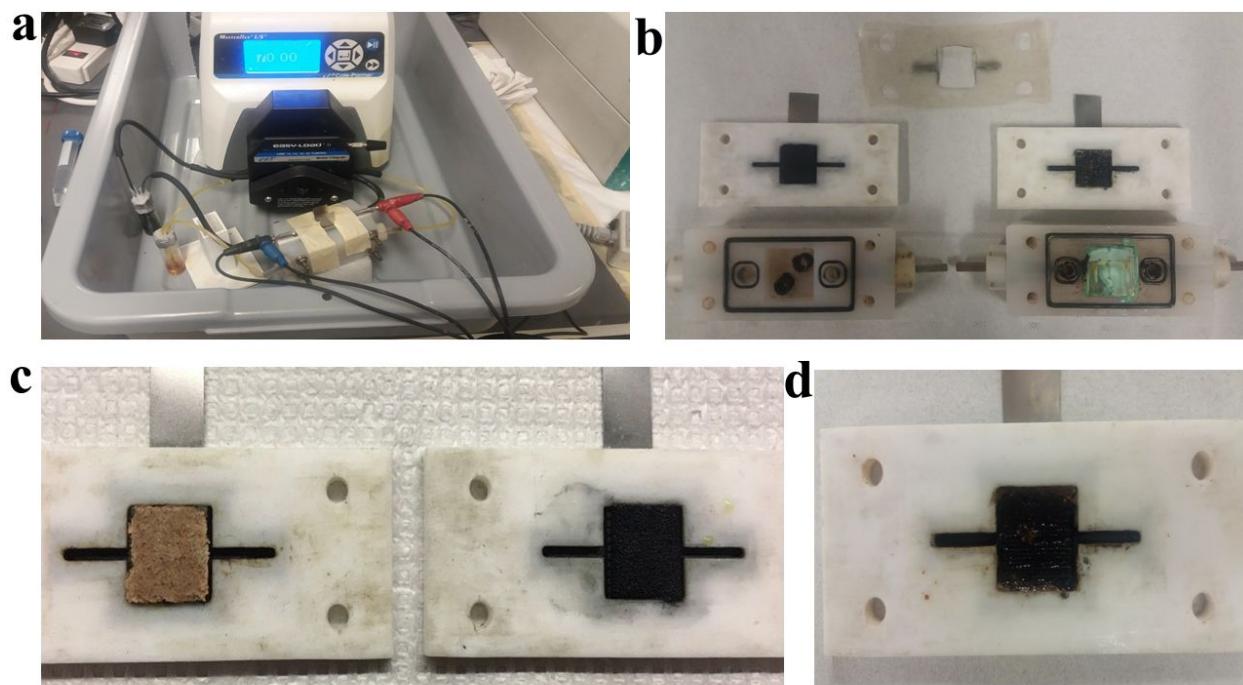


Fig. S3. Photographs of the different parts of the PS/I flow cell after 10 cycles for the both MFE approach and carbon felt electrode cases. (a) An assembled PS/I flow cell. (b) An opened PS/I flow cell after using the MFE approach; the right side shows the positive electrode side of the PS/I flow cell including the graphite plate inside the PTFE frame, end plate, and the neodymium magnet covered by a green Teflon tape which is embedded within the end plate. (c) The left side shows the precipitation on the carbon felt at the positive electrode after the tenth charging, and the right side shows the nickel foam negative electrode. (d) Precipitation at the positive electrode using the MFE approach after the tenth cycle.

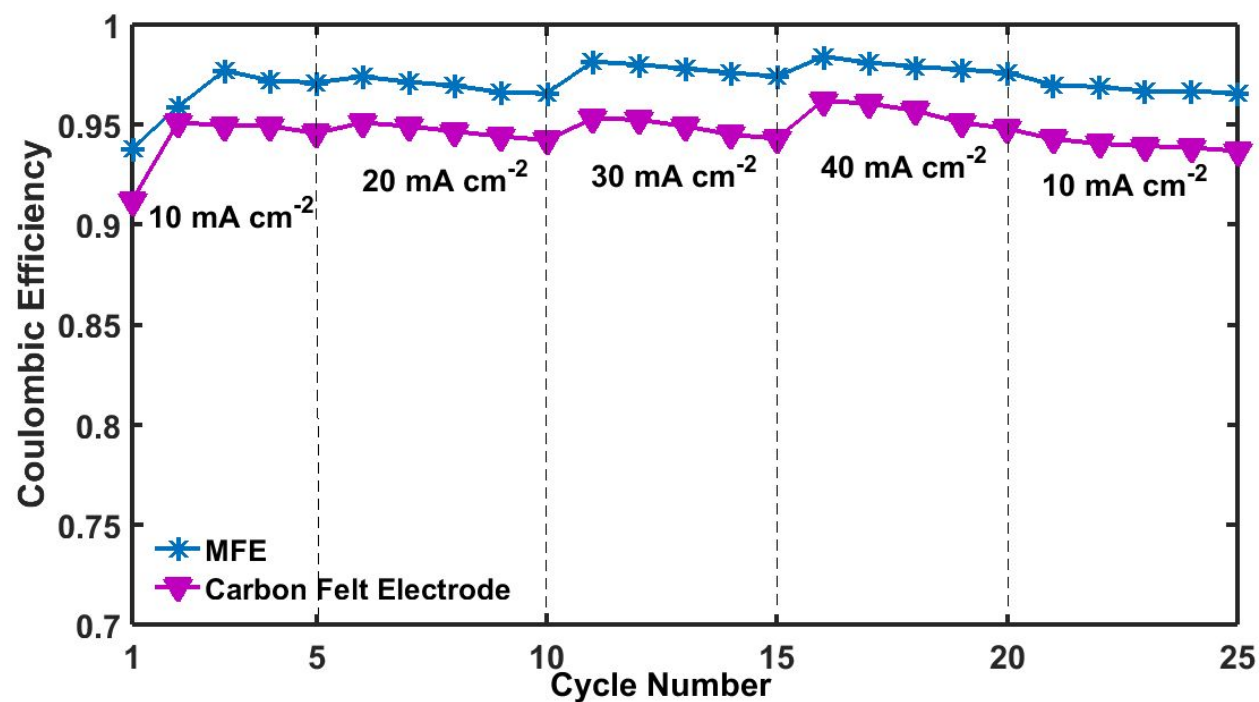


Fig. S4. Influence of current density on the PS/I RFB coulombic efficiency using the MFE approach in comparison with the carbon felt electrode at 70 mL min⁻¹, MMWCNTs mass concentration of 2.41 g L⁻¹, and magnetic field intensity of 1390 G.

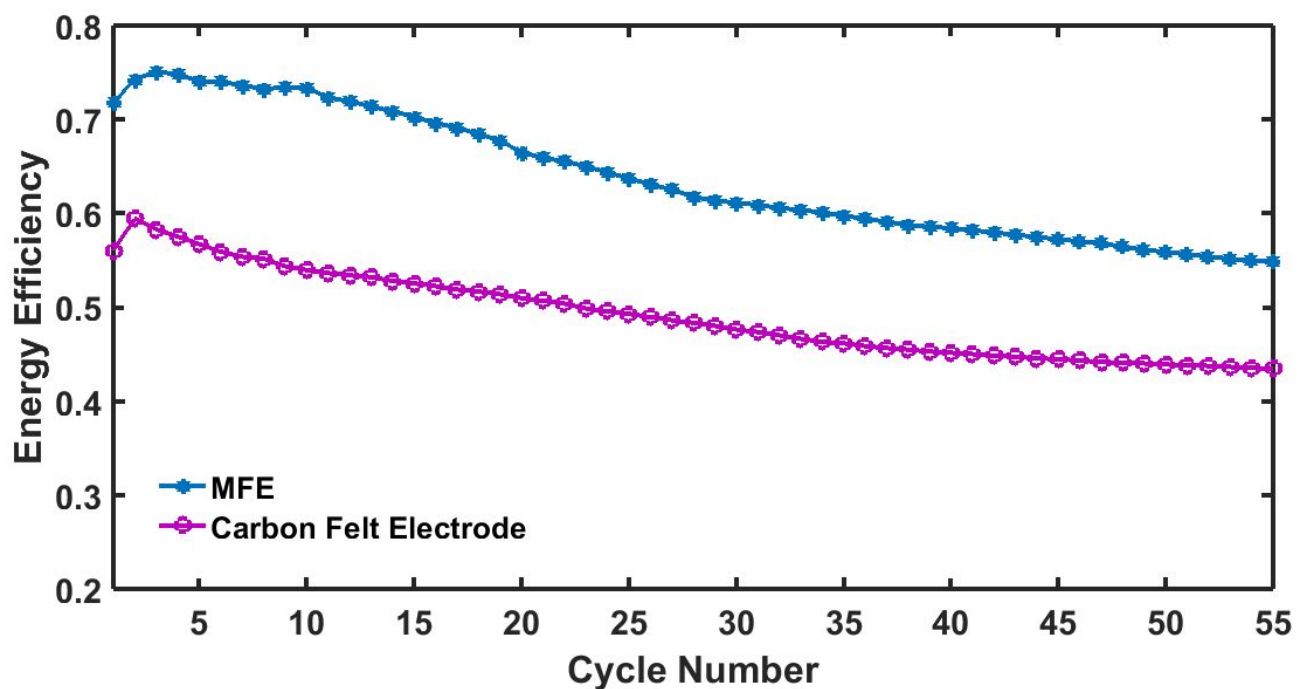


Fig. S5. Energy efficiency of the first 55 cycles of the PS/I RFB using the MFE approach and carbon felt electrode during galvanostatic charge-discharge at 30 mA cm^{-2} , 70 mL min^{-1} , magnetic field intensity of 1390 G , and MMWCNTs mass concentration of 2.41 g L^{-1}