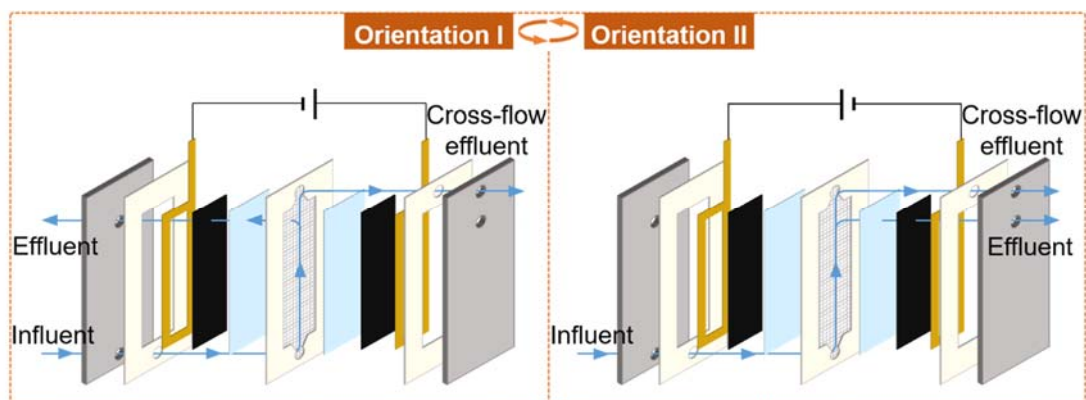
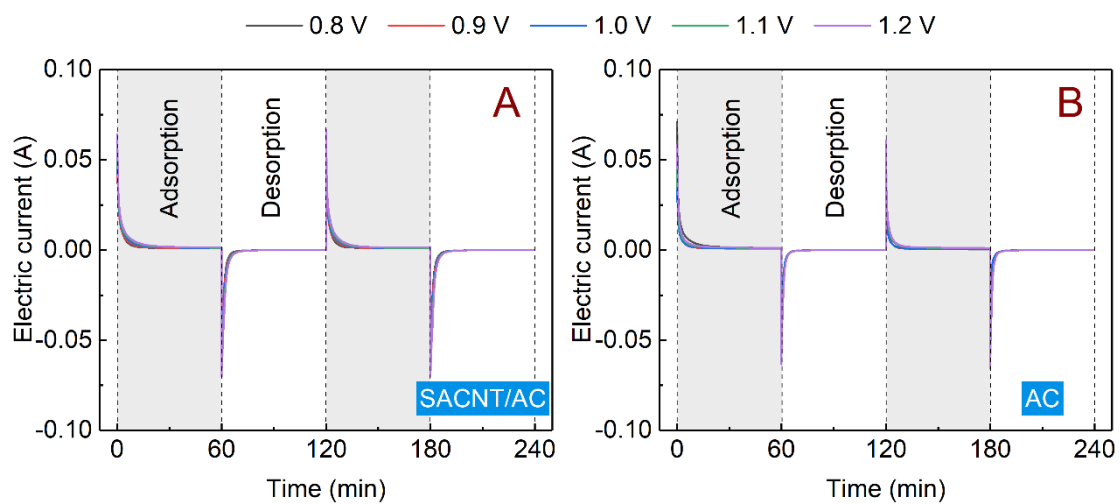


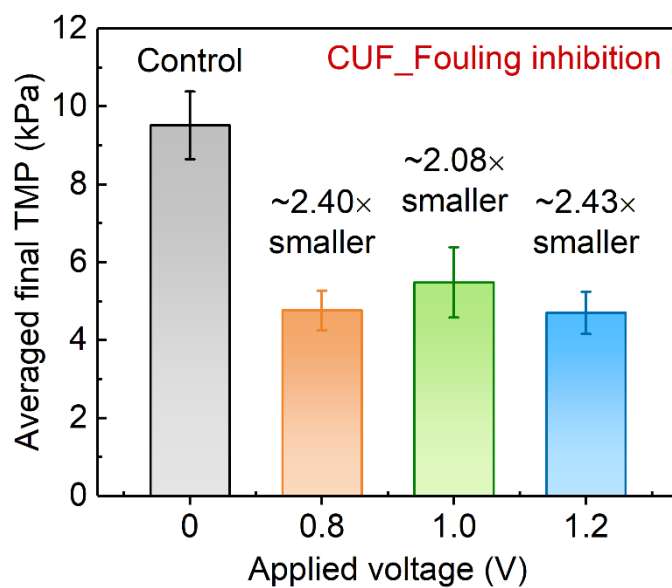
## Supplementary Material



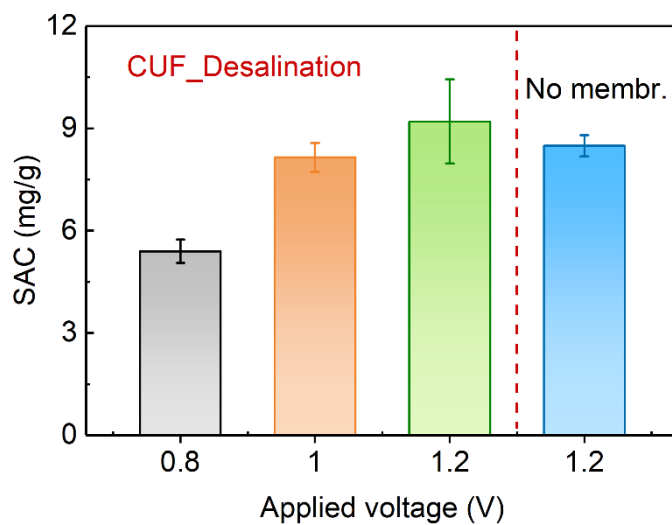
**Fig. S1.** Illustration of the CUF operational mode referring to the periodically reversed power orientations and liquid flow directions.



**Fig. S2.** Variations of the electric current during the capacitive deionization (CDI) tests with the (A) cross-stacked super-aligned carbon nanotube (SACNT) / activated carbon (AC) and (B) AC electrodes at different applied voltages (0.8, 0.9, 1.0, 1.1, and 1.2 V).



**Fig. S3.** Comparison of the final transmembrane pressures (TMPs) averaged from the last TMP data of the six purification cycles in the capacitive deionization enhanced ultrafiltration (CUF) tests among different voltage conditions. The resultant final TMPs in the 0.8, 1.0, and 1.2 V tests were ~2.40, ~2.08, and ~2.43 times smaller than that in the control (0 V) test.



**Fig. S4.** Comparison of the salt adsorption capacity (SAC) in the CUF tests among the 0.8 V, 1.0 V, 1.2 V, and 1.2 V control (i.e., the ultrafiltration membranes were not installed) tests.