

Supporting Information

FePO₄/rGO composite anode for high performance electrochemical deionization of brackish water

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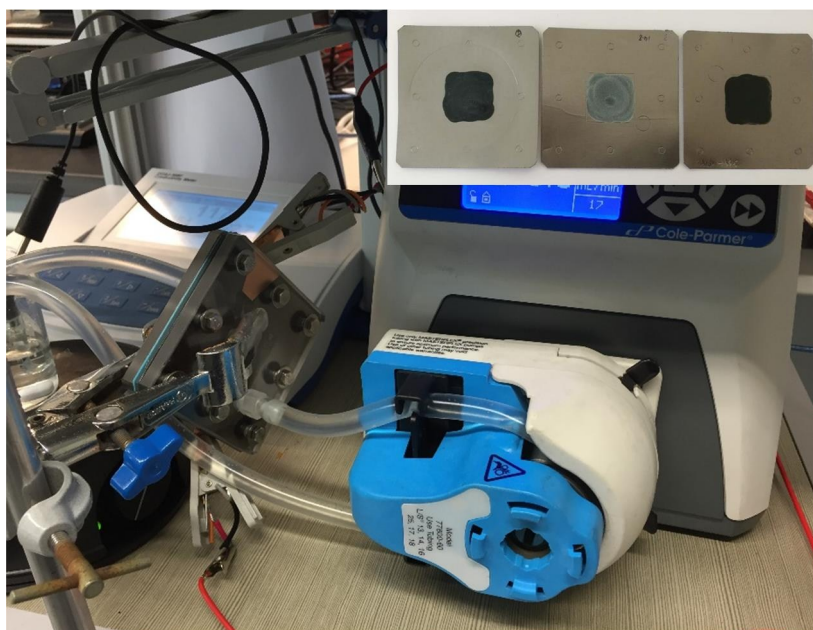


Figure S1. Photograph of the EDI set. Inserted are the AC, FePO₄ and FePO₄@rGO electrodes respectively (from left to right).

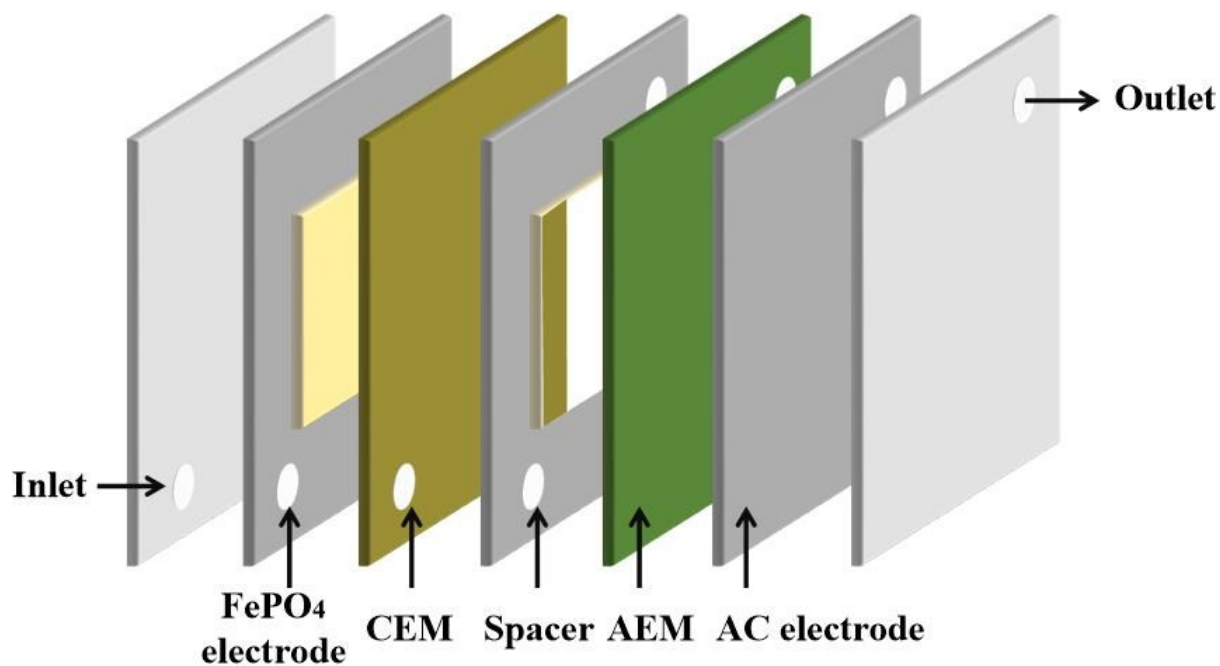


Figure S2. Schematic diagram of the EDI device.

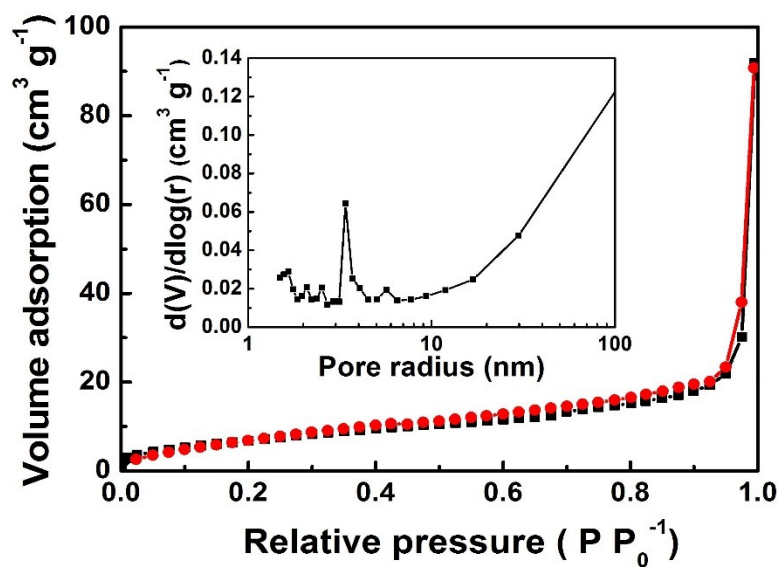


Figure S3. Nitrogen sorption isotherms of the amorphous FePO₄ nanoparticles, inserted is the pore size distribution.

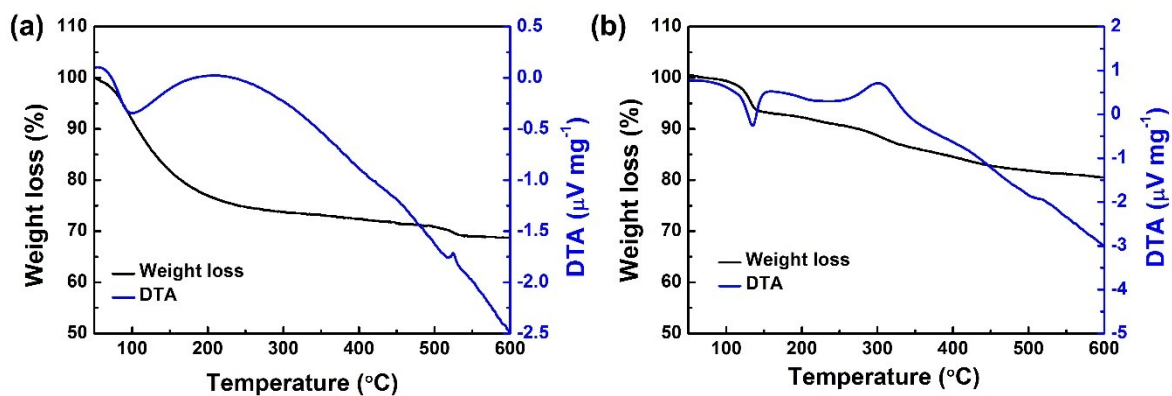


Figure S4. TGA and DTA profiles of FePO_4 and $\text{FePO}_4@\text{RGO}$ powders measured at a heating rate of $5\text{ }^\circ\text{C min}^{-1}$ in air.

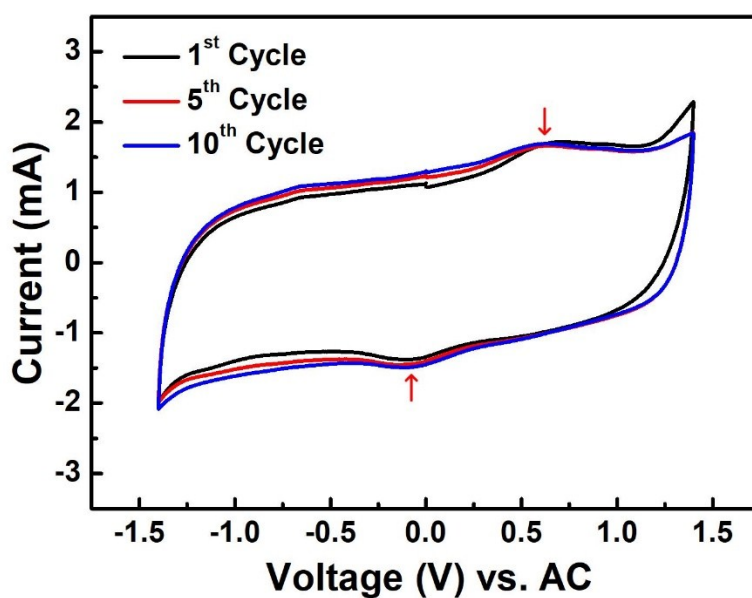


Figure S5. CV curve of the FePO_4 electrode measured at a scan rate of 10 mV s^{-1} coupled with an AC electrode under a flow-through system shown in fig S1.

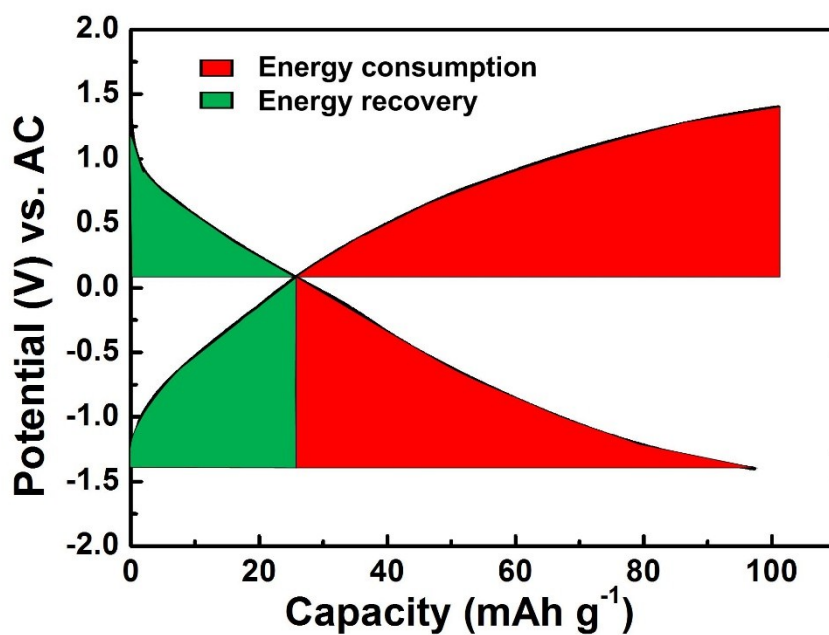


Figure S6. (d) A typical charging and discharging curve of EDI within a flow through system with a current density of 100 mA g^{-1} . The red and green colours represent the charging and discharging process respectively. The total energy consumed by the EDI should be calculated by the red area (energy consumption) minus the green area (energy recovery).

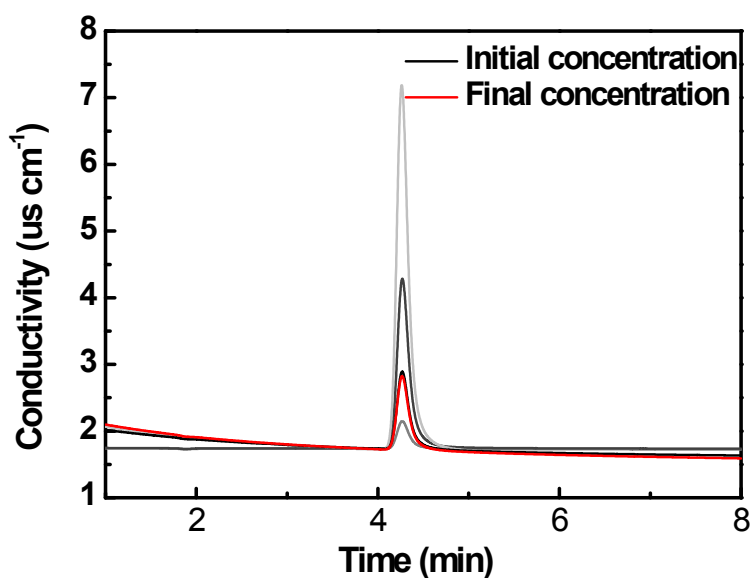


Figure S7. Conductivity detection and the retention time of IC for brackish water before and

after deionization.

Table 1. Comparison of the chloride ion concentration before and after experiment

| Sample type | Index | Retention time | Concentration |
|-----------------------|-------|----------------|---------------|
| Initial concentration | 1 | 4.267 | 2405ppm |
| Final concentration | 1 | 4.267 | 2302ppm |

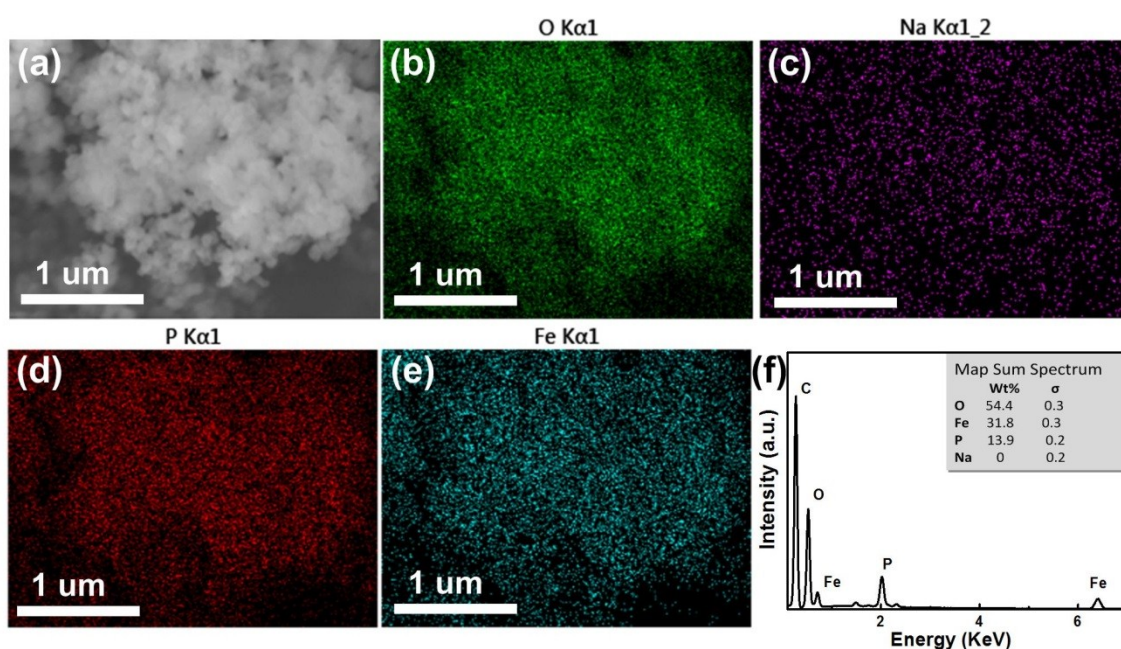


Figure S8. The FESEM image (a), the element mapping images of O, Na, P, Fe (c~e) and the EDS spectra (f) of the FePO₄ particles before sodium intercalation.

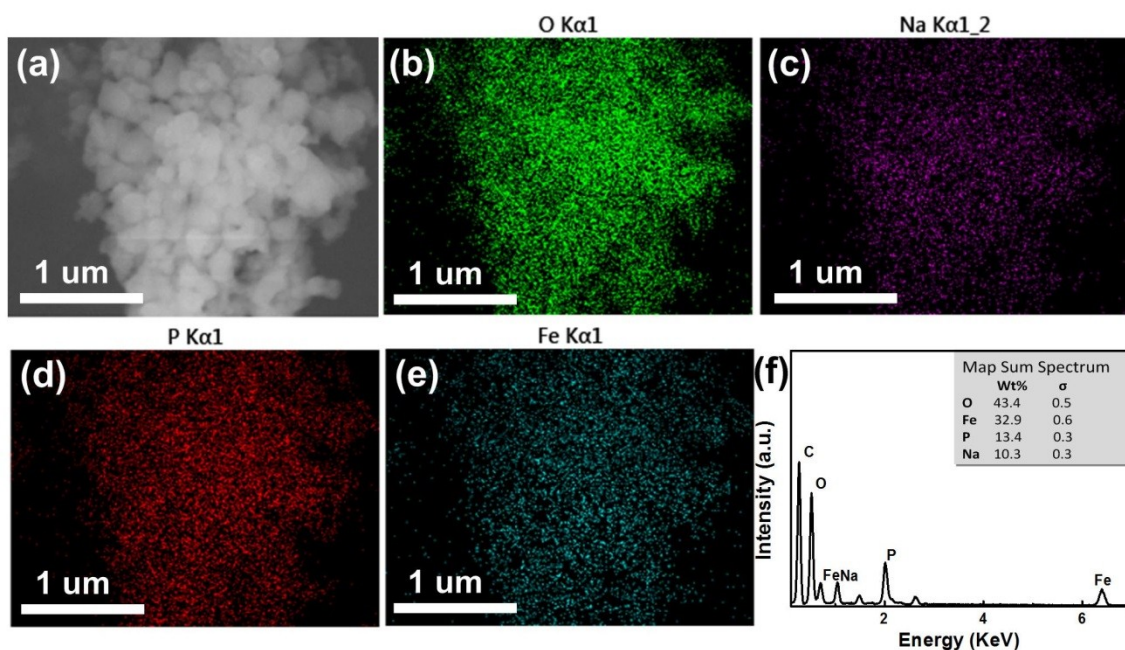


Figure S9. The FESEM image (a), the element mapping images of O, Na, P, Fe (c~e) and the EDS spectra (f) of the FePO_4 particles after sodium intercalation.

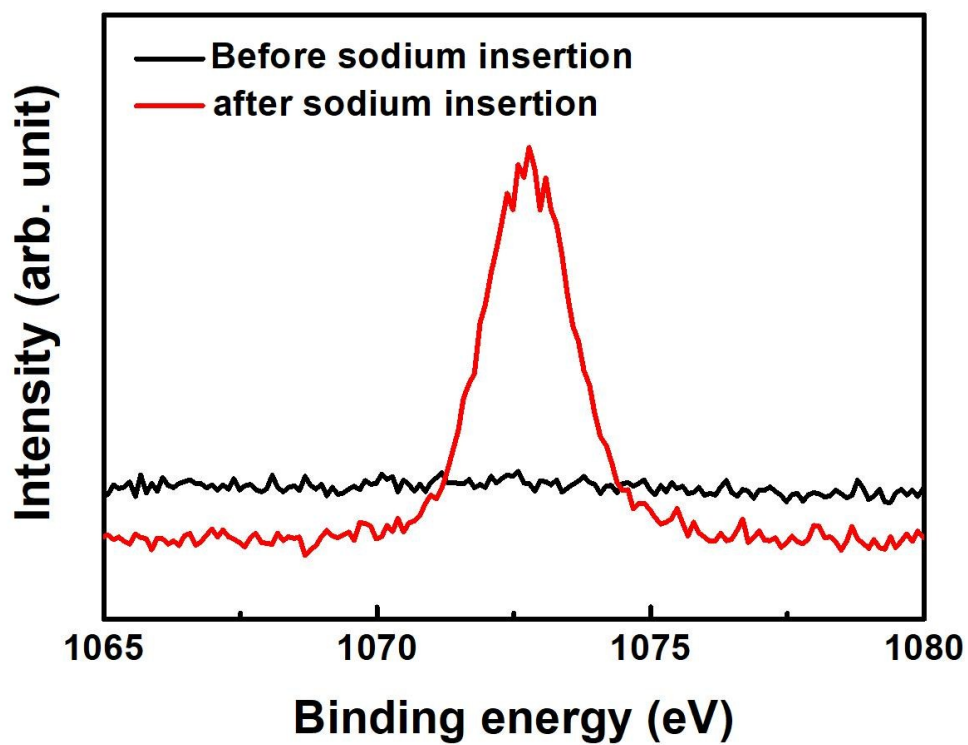


Figure S10. High resolution XPS Na 1s spectra of FePO_4 electrode before and after sodium

insertion.