Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.
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Supplementary Information

I. Maximum power density calculation

Maximum power density calculation of PANI Films are calculated from the galvanostatic charge/discharge curves at different current densities using the following formulas:

$$P_s = \frac{(\Delta V)^2}{4mR_{es}} \quad \text{(S1)}$$

$$R_{es} = \frac{IR_{drop}}{2I} \quad \text{(S2)}$$

where I is charge or discharge current, Δt is discharge time, ΔV is potential window (0.8 V), IR_{drop} is potential drop, m is mass of PANI films, R_{es} is the internal resistance of the electrode that is estimated from the potential drop (IR_{drop}) at the beginning of the discharge curve.

II. Supplemental Figures

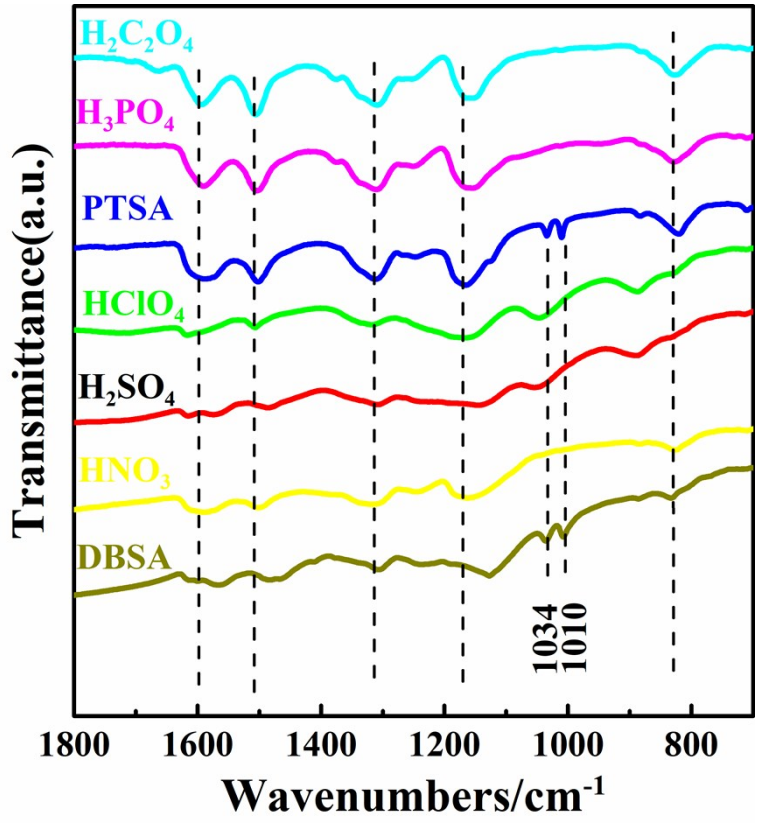

Fig. S1. FT-IR spectra of PANI-EB films after electrochemical doping in various acid solutions

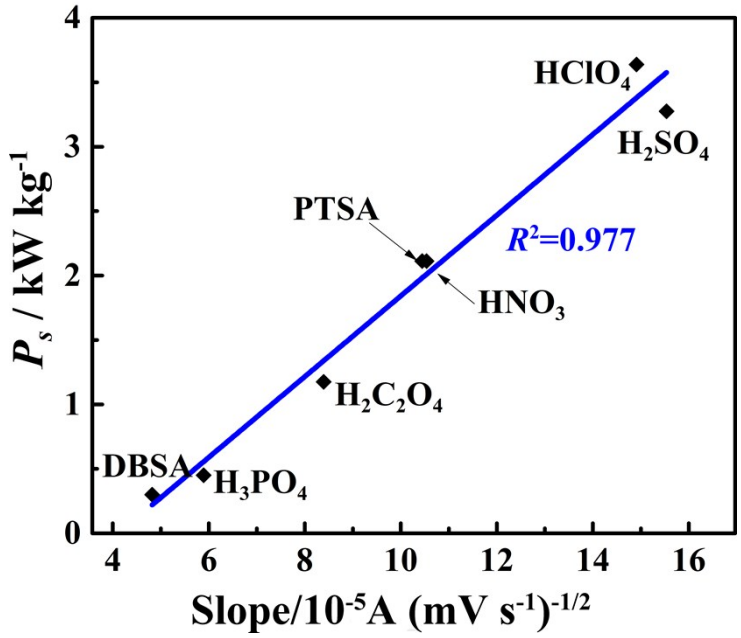

Fig. S2. Relationship between maximum power density and slopes of linear regression for I_p and $v^{1/2}$. Maximum power density of PANI can be calculated by equations (S1) and (S2).

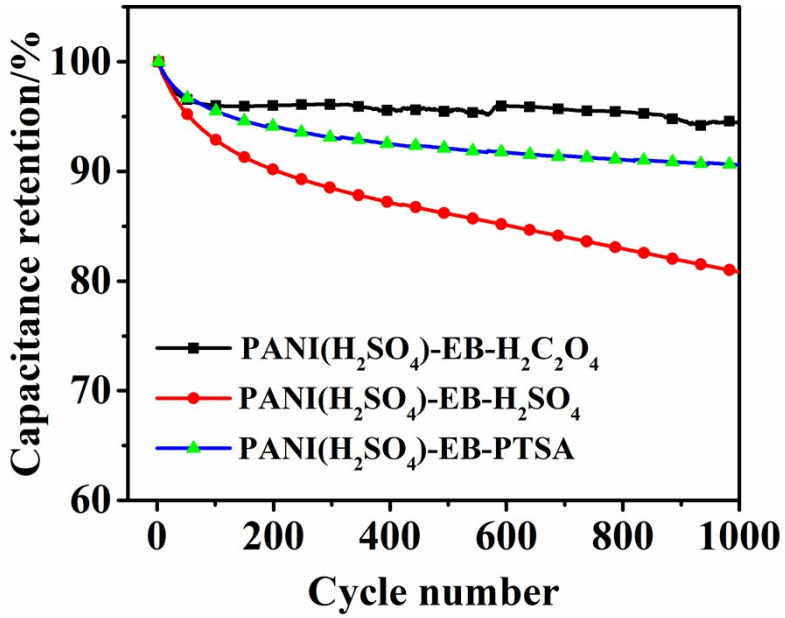

Fig. S3 Cycling performance of PANI(H_2SO_4)-ES films with different dopant anions in the corresponding acids after 1000 cycles at 100 mV s^{-1}.