

Supplementary Information

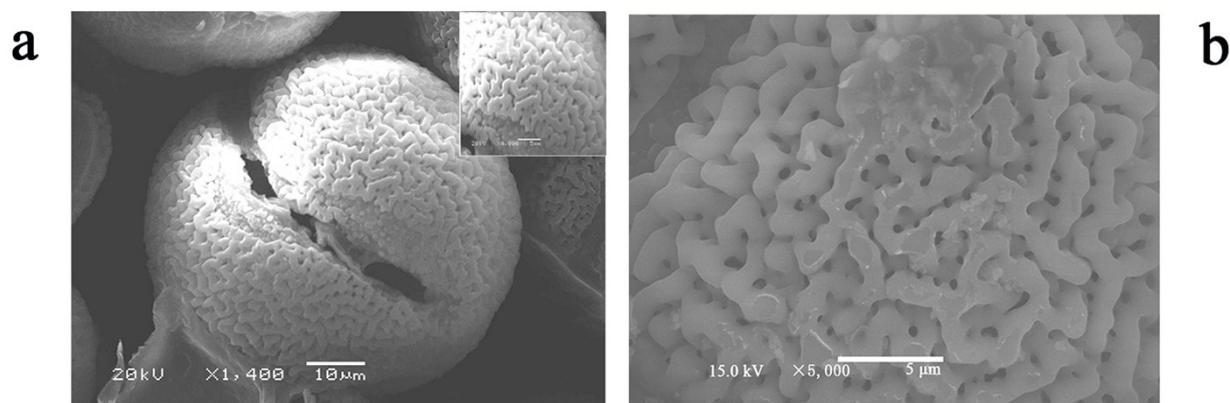


Figure.S1 SEM images of C (a) and CS (b).

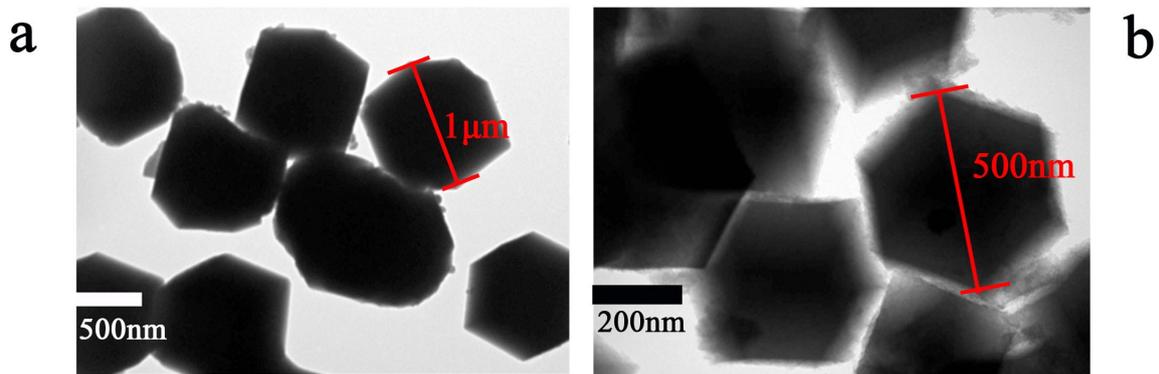


Figure.S2 TEM images of ZIF-8 (a) and HPNCs (b).

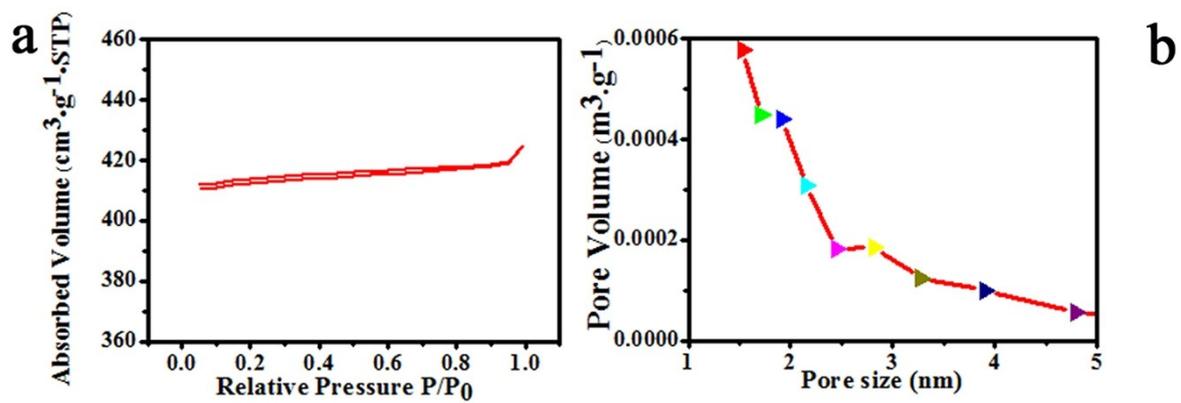


Figure.S3 Nitrogen adsorption-desorption isotherms of HPNCs (a) and Pore size distribution of HPNCs (b).

Table.S1. Atomic compositions of HPNCs/CS, obtained by XPS survey spectrum.

Sample	C (atom%)	N (atom%)	O (atom%)	Zn (atom%)
HPNCs/CS	74.86	14.1	10.79	0.25

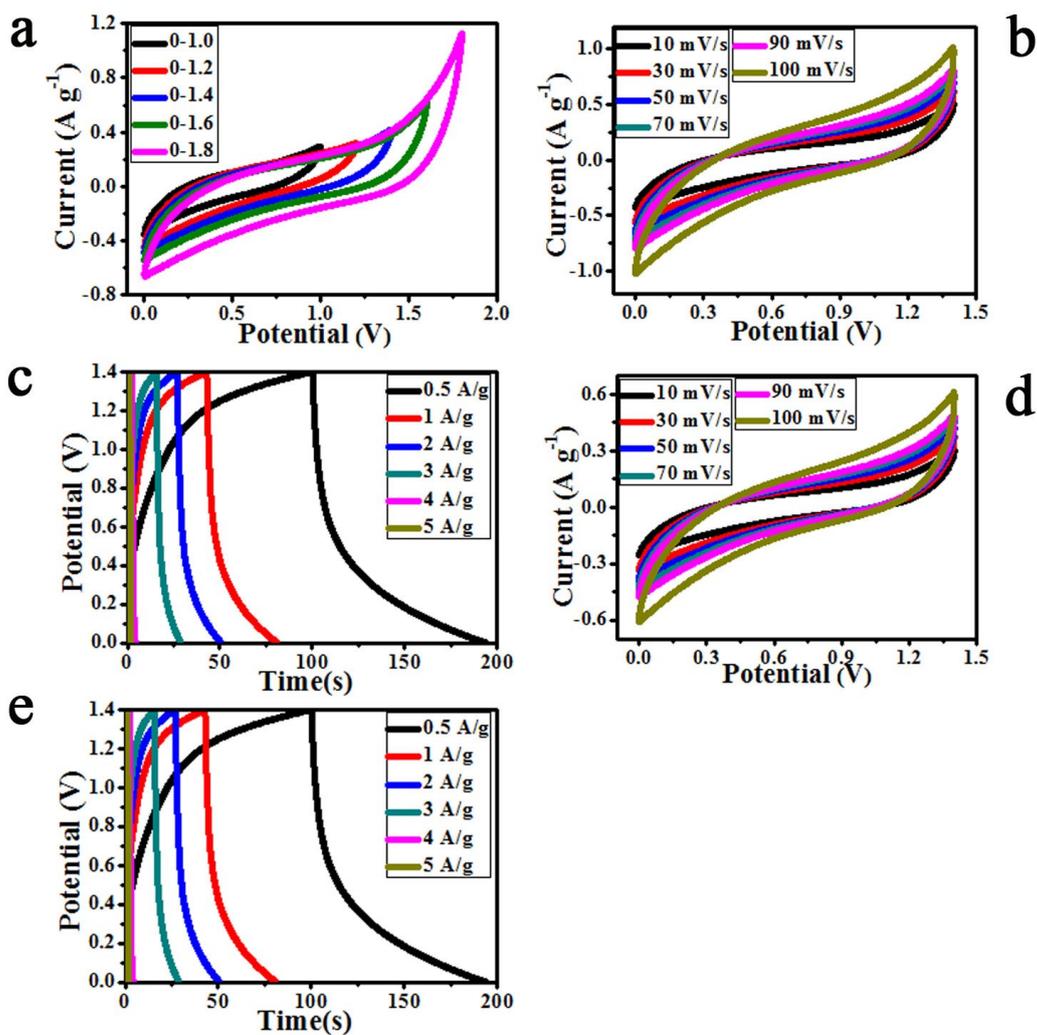


Figure.S4 CV curves of HPNCs/CS in different operation voltages at the scan rate of 20 mV s^{-1} in 6 M KOH electrolyte (a), CV curves of HPNCs/CS tested at various scan rates in the potential range from 0 to 1.4 V (b); GC curves of HPNCs/CS tested at various current densities in the potential range from 0 to 1.4V (c). CV curves of CS at various scan rates in the potential range from 0 to 1.4 V in 6 M KOH electrolyte (d). GC curves of CS at different current densities in the potential range from 0 to 1.4 V in 6 M KOH electrolyte (e).