

Agricultural waste buckwheat husk derived bifunctional nitrogen, sulfur and oxygen-co-doped porous carbon for symmetric supercapacitor and capacitive deionization

Guanfeng Li ^{a#}, Fan Yang ^{a#}, Lisha Wu ^a, Lei Qian ^{a*}, Xiaorong Hu ^{a*}, Zaimin Wang ^b, Wen Chen ^a

^a College of Materials and Chemistry & Chemical Engineering, Chengdu University of
Technology, Chengdu, Sichuan, 610059, China.

^b College of Environment and Civil Engineering, Chengdu University of Technology, Chengdu,
Sichuan, 610059, China.

[#] These authors contributed equally to this work.

* Corresponding authors. qianlei13@cdut.cn; huxiaorong@cdut.cn.

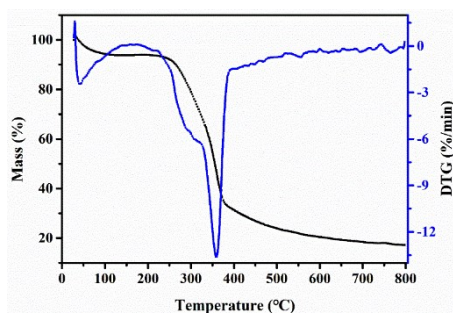


Fig. S1 the TG/DTG curves of buckwheat husk.

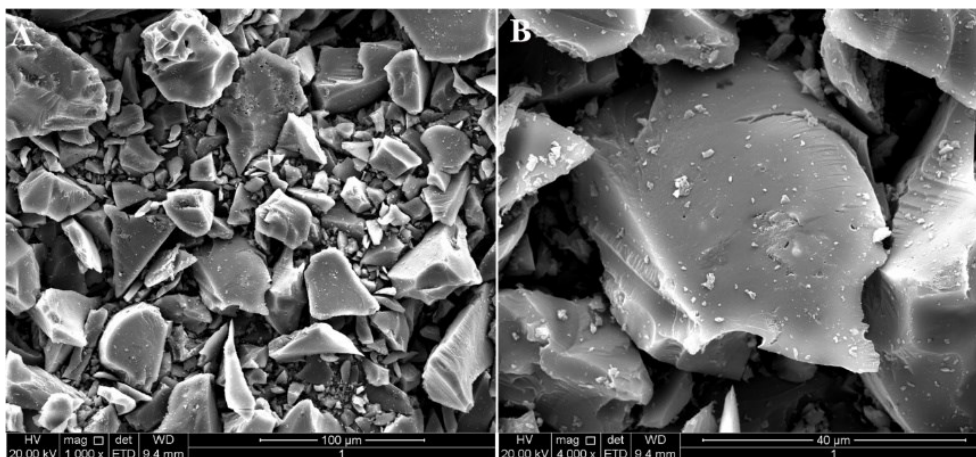


Fig. S2 The SEM images of the precursor of NSO-PC-2.

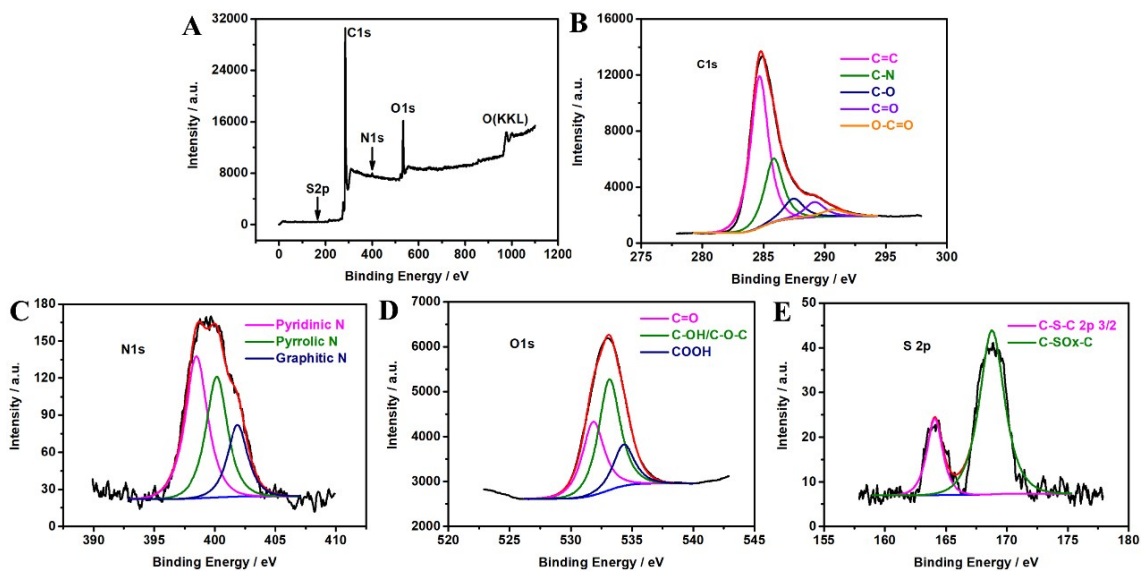


Fig. S3 The XPS survey (A), C1s spectra (B), N1s (C), O1s (D), and S2p (E) XPS spectra of NSO-PC-1.

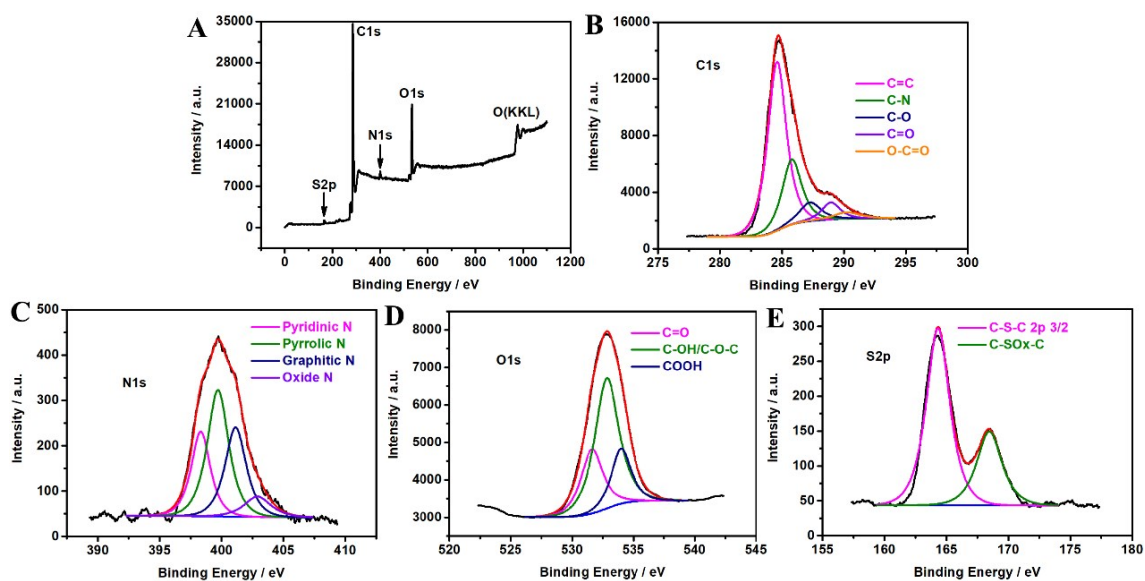


Fig. S4 The XPS survey (A), C1s spectra (B), N1s (C), O1s (D), and S2p (E) XPS spectra of NSO-PC-3.

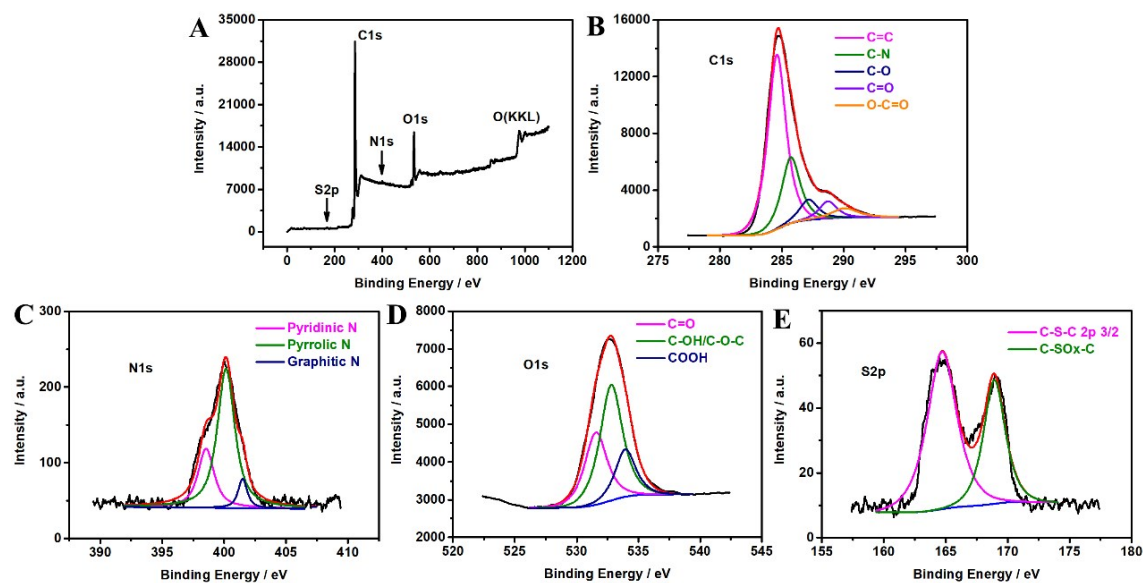


Fig. S5 The XPS survey (A), C1s spectra (B), N1s (C), O1s (D), and S2p (E) XPS spectra of NSO-PC-4.

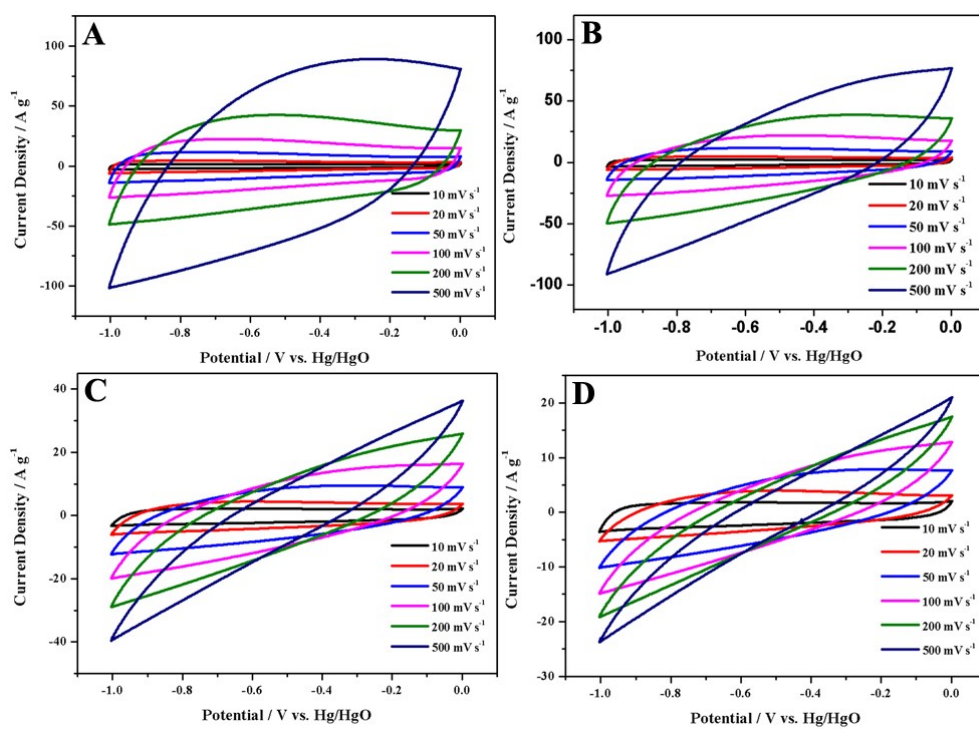


Fig. S6 The CV curves of undoped PC (A), NSO-PC-1 (B), NSO-PC-3 (C) and NSO-PC-4 (D) at different scan rate.

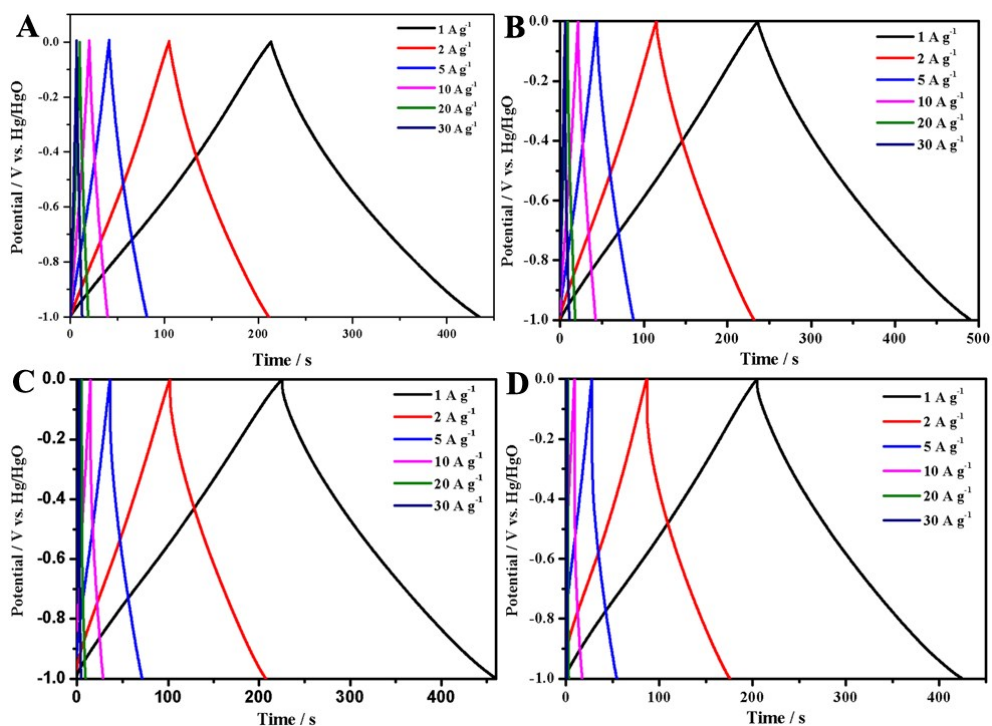


Fig. S7 The GCD curves of undoped PC (A), NSO-PC-1 (B), NSO-PC-3 (C) and NSO-PC-4 (D) at different current density.

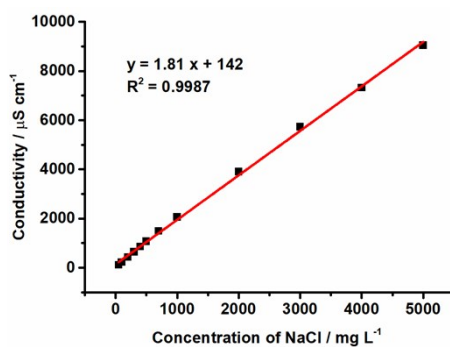


Fig. S8 The linear relationship between the conductivity and concentration of NaCl solution.

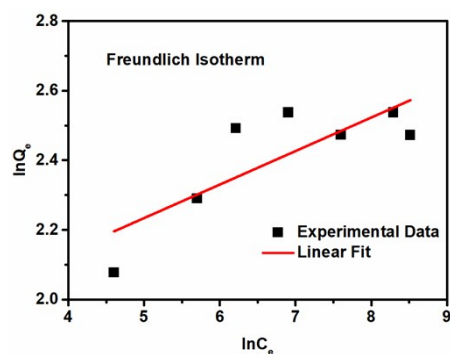


Fig. S9 Equilibrium isotherms fitted with Freundlich isotherm model.

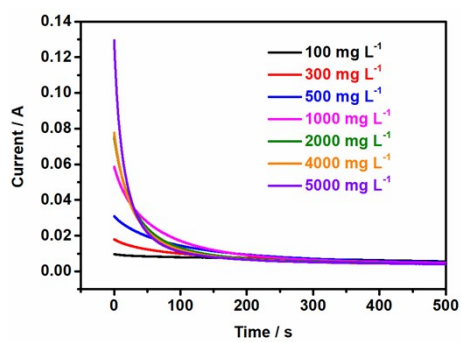


Fig. S10 The current transient curve of NSO-PC-2 electrode in different NaCl solution at 1.2 V.

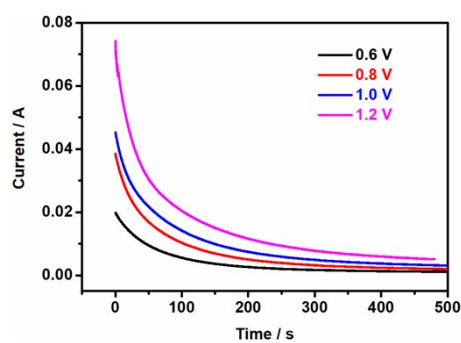


Fig. S11 The current transient curve of NSO-PC-2 electrode in 500 mg L⁻¹ NaCl solution at different voltage.