Electronic supplementary information for:

**Nitrogen-doped carbon quantum dots (N-CQDs)/Co3O4 nanocomposite for high performance supercapacitor**

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**SUMMARY:**

**S-1:** *Characterization techniques used*

**S-2:** *Fabrication of electrode*

**S: 3** *High resolution XPS spectrum of O1s*

**S: 4***Charge storage mechanisms*

**S-1: *Characterization******techniques used***

The surface texture and morphological details were examined by field emission-scanning electron microscopy (JEOL, JSM- 6701F), scanning electron microscopy (SEM; Hitachi S-7400), and transmission electron microscopy (JEOL, JEM-2010). The X-ray diffraction (XRD) patterns were recorded with a Rigaku X-ray diffractometer equipped with a Cu sealed tube (λ = n1.54056 Å). The surface chemical composition was measured by Xray photoelectron spectroscopy (XPS). The N2 sorption isotherms were measured by a Micromeritics ASAP 2420 system. Electrochemical experiments in a three-electrode cell were executed in 6 M aqueous KOH with Ag/AgCl as reference electrode and platinum wire as a counter electrode. Cyclic voltammetry (CV) was measured from −0.4 to +0.6 V. Galvanostatic charge−discharge (GCD) was measured in between −0.4 and 0.6 V. Electrochemical impedance spectroscopy (EIS) was run at 5 mV amplitude between 100 kHz and 0.01 Hz in an open circuit. The electrochemical parameters were calculated using standard equations

**S-2: Fabrication of electrode:**

Tofabricate the electrode, a slurry of N-CQDs/Co3O4 nanocompositepowder was mixed in ethanol and then few drops poly-vinylene difluoride (PVDF) were intimately mixed in N-methyl-2-pyrrolidinone (NMP, showa). This slurry was painted onto a piece (1x1 cm2) of nickel foam and dried in oven at 60°C for 10 hrs.

**S-3: High resolution XPS spectrum of O1s:**



**S-4: Charge storage mechanism:**

The mechanism of electrochemical reaction can be expressed as follows;

Co3O4 + OH− + H2O **⇔** 3CoOOH + e−

CoOOH + OH− **⇔** CoO2 + H2O + e–