

# Dodecyl Sulfate Induced Fast Faradic Process in Nickel Cobalt oxide/Reduced Graphite Oxide Composite Material and Its Application for Asymmetric Supercapacitor Device

Xu Wang,<sup>a</sup> Wan Shuang Liu,<sup>a</sup> Xue Hong Lu<sup>a</sup> and Pooi See Lee<sup>\*a</sup>

<sup>†</sup>School of Materials Science and Engineering, Nanyang Technological University, Singapore

639798

\* Corresponding author Email: pslee@ntu.edu.sg

Raman spectrum of sample SG-2

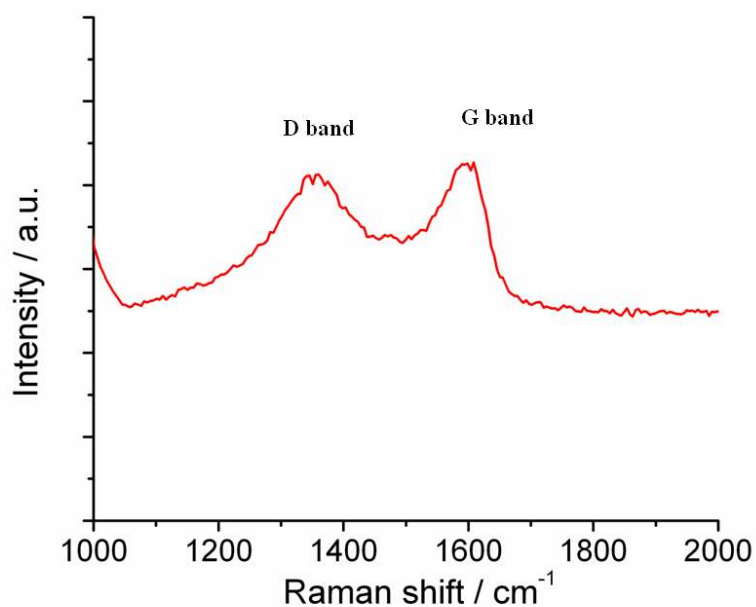
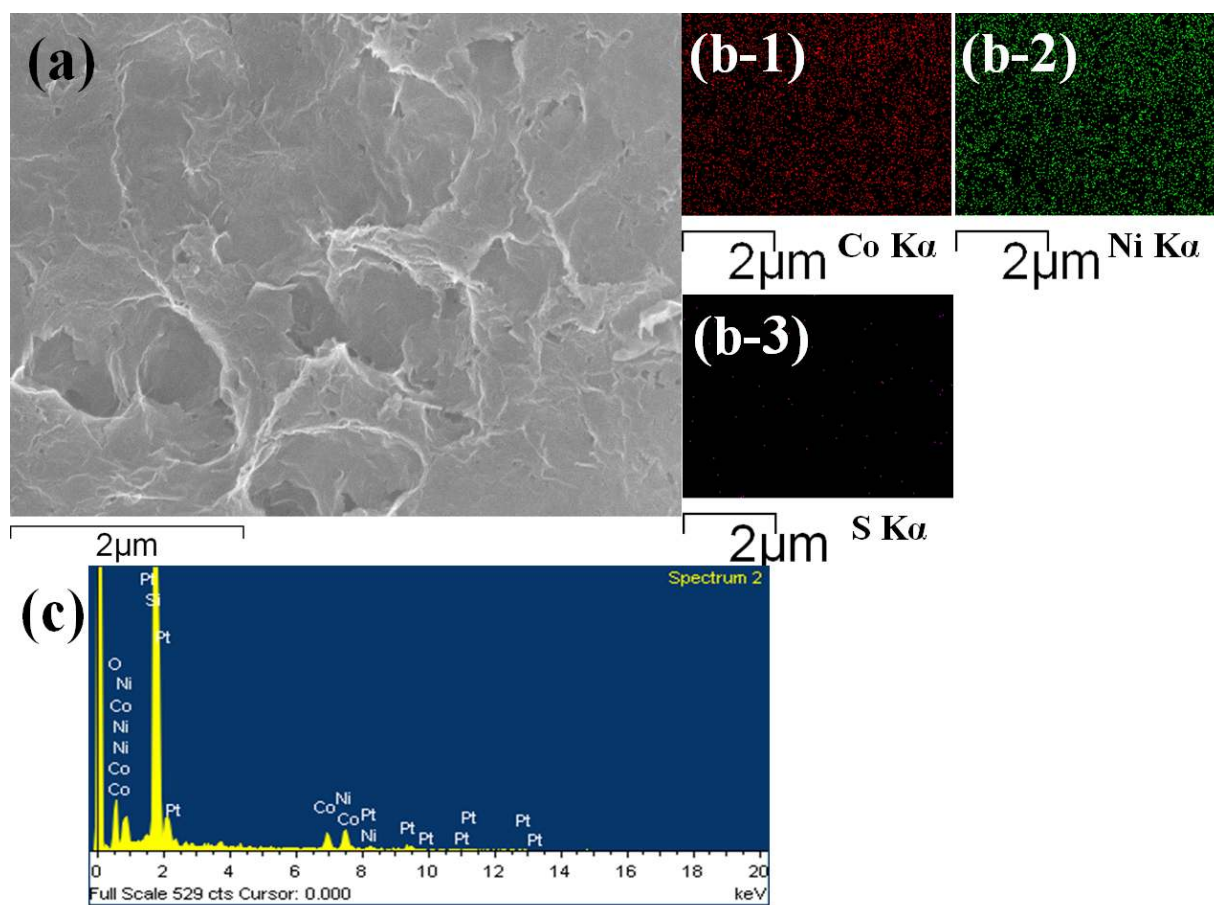


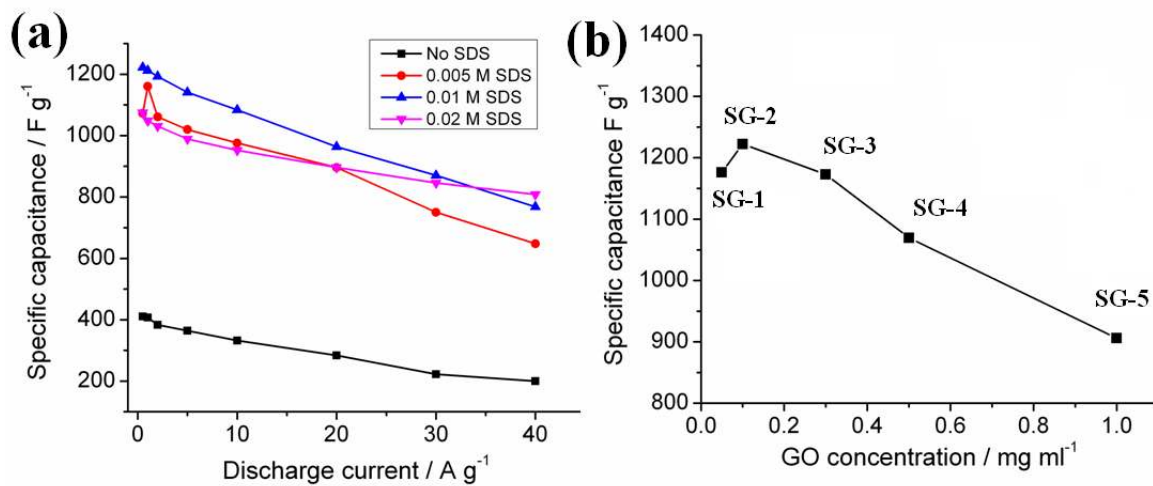
Figure S1. Raman spectrum of sample SG-2.

### SEM image and EDX spectrum of sample SG-2



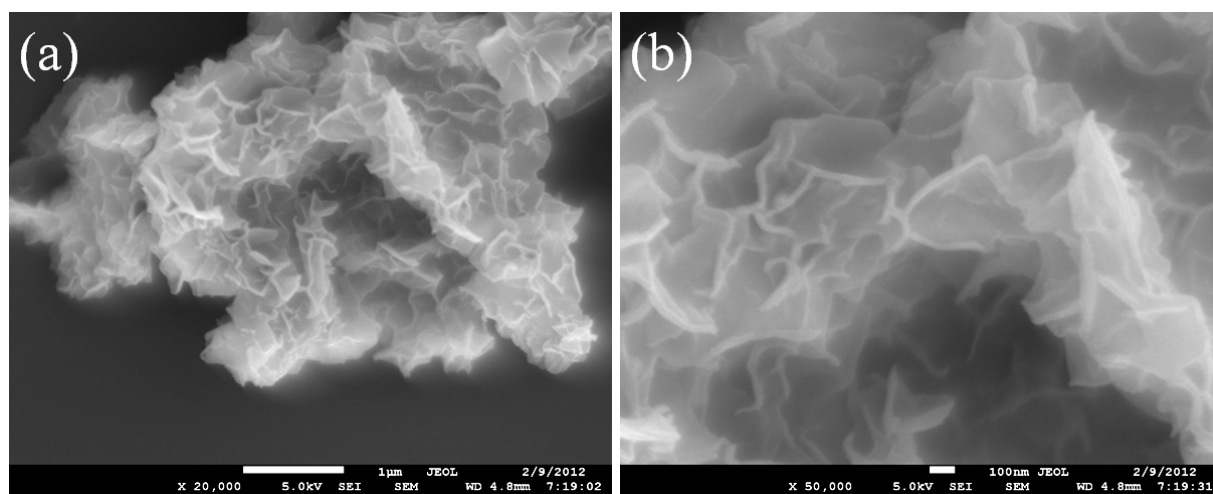
**Figure S2.** (a) Micrograph of sample SG-2 (yellow line indicates the EDX line scan path); (b) EDX elements mapping of Co K $\alpha$ , Ni K $\alpha$  and S K $\alpha$ ; (c) EDX of sample SG-2.

### Electrochemical characterizations of different samples



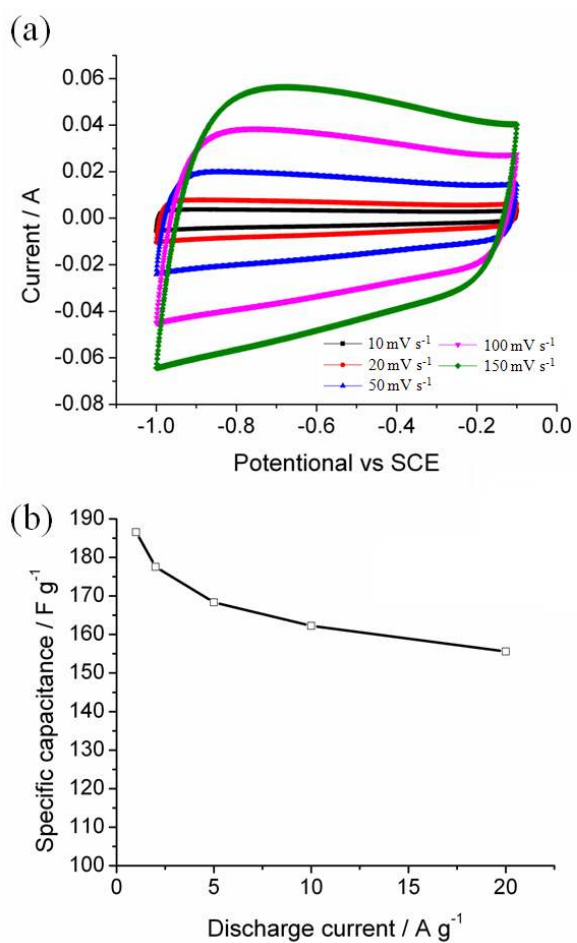
**Figure S3.** (a) Relationship between specific capacitance and discharge current of different SDS concentrations; (b) relationship between specific capacitance at 0.5 A g<sup>-1</sup> and GO concentration in the staining solutions.

**SEM images of NiCo<sub>2</sub>O<sub>4</sub>/rGO composite prepared without SDS**



**Figure S4.** SEM images of (a) low magnification and (b) high magnification NiCo<sub>2</sub>O<sub>4</sub>/rGO composite material prepared without SDS in starting solution.

### Electrochemical characterization of activated carbon



**Figure S5.** (a) CV curves of activated carbon in 2 M KOH at different scan rates; (b) specific capacitance vs discharge current relationship of activated carbon.