Supplementary Information

$Ni(OH)_2$ nanosheets grown on 3D graphene framework as an excellent cathode for flexible supercapacitors

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The different composites were made at 90℃ for 12, 24, 36, 48 h, respectively, with other conditions unchanged.

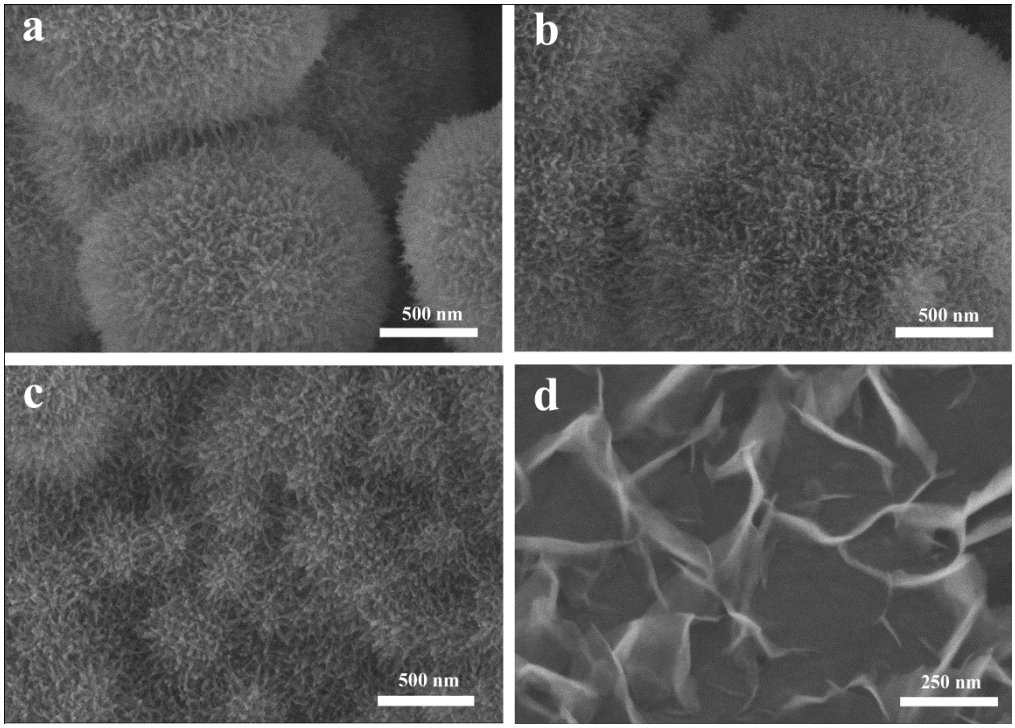

Figure S1. (a) (b) (c) (d) SEM images of the $Ni(OH)_2$ nanosheets/3D graphene composite made at 90℃ for 48, 36, 24, 12 h, respectively.

Figure S1 shows flower-like morphology about different samples. It is evident from Figure S1 that the more reaction time lead to the more load of the active materials.

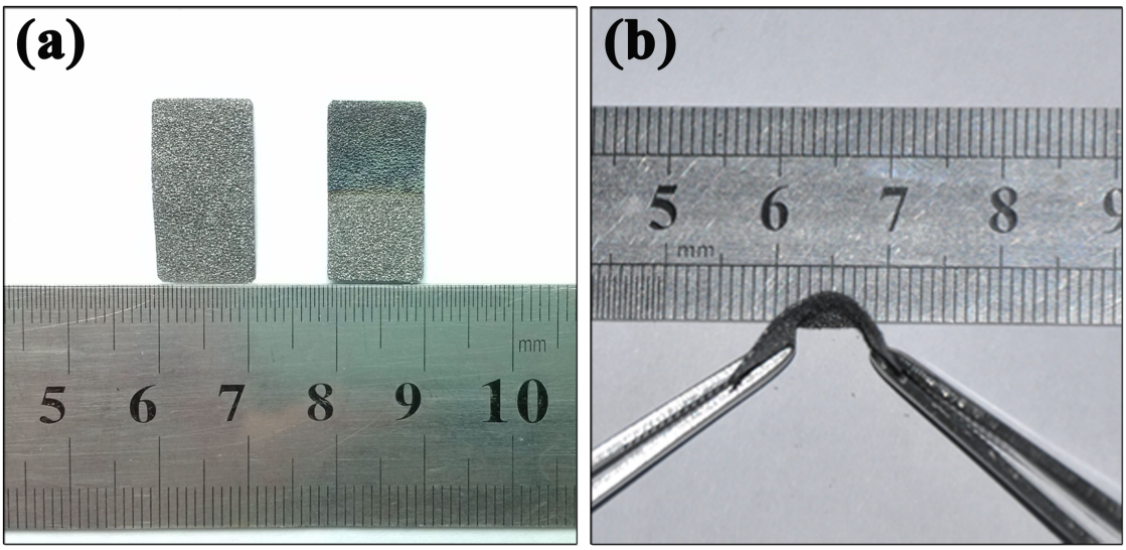

Figure S2. (a) The photo images of the pristine 3DG (left) and the Ni(OH)2 nanosheets/3D graphene composite (right), and (b) the flexible electrode.

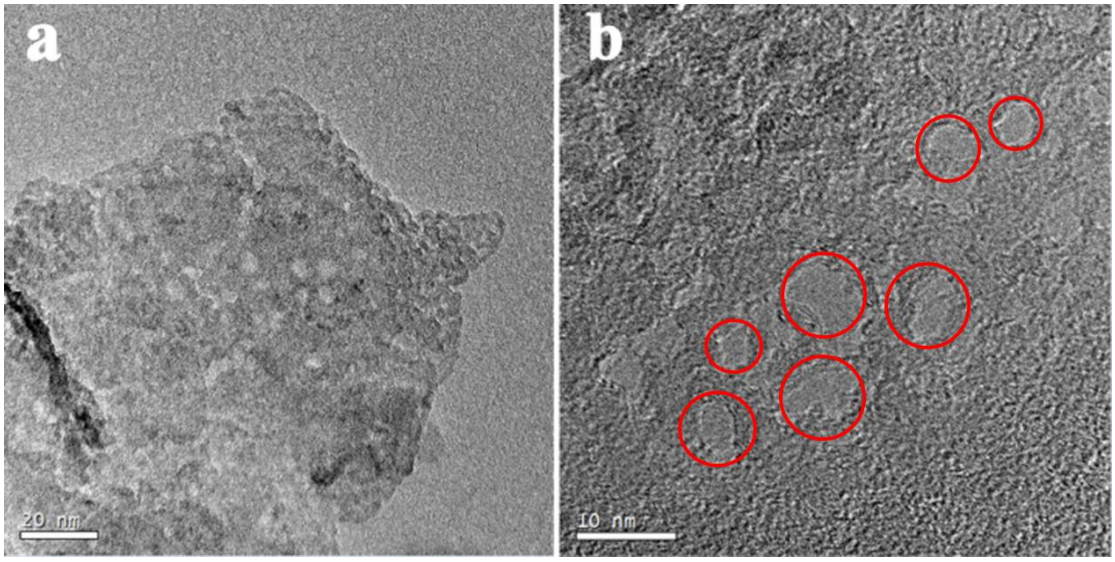

Figure S3. (a) (b) TEM images of the composite show a highly random porous architecture of the nanosheets

To demonstrate the random porous architecture of the nanosheets, the pores marked by red circles in Figure S3b can be clearly seen.

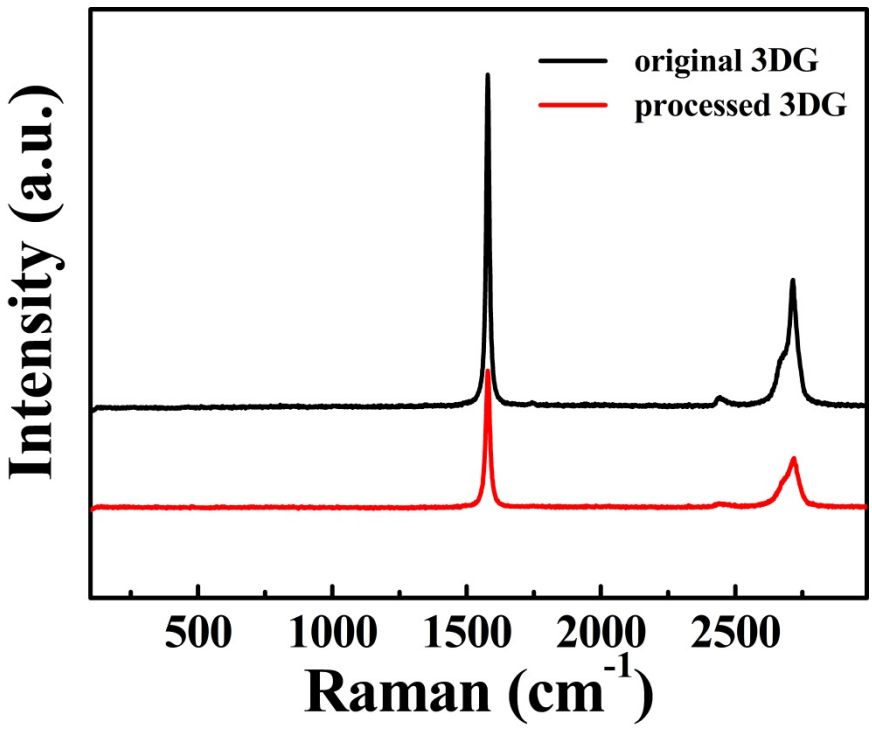

Figure S4. The Raman spectra of original 3DG and processed 3DG.

The Raman spectra of processed 3DG is just lower than the original graphene on the signal strength, no obvious D-band (usually at ≈1300 cm^{-1}) means that the $Ni(OH)_2$ introduce few defects to the graphene.

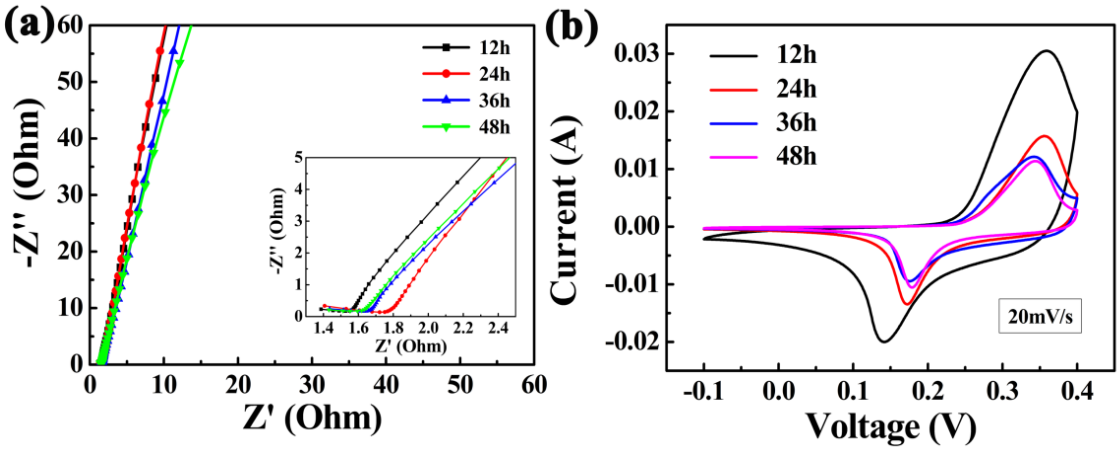

Figure S5. (a) Nyquist plots and (b) CV curves at the scan rates of 20 mV s^{-1} of the $Ni(OH)_2$ nanosheets/3DG composites with different fabrication time.

The abnormal consequence shown in Figure S5a is that the more load of the active material lead to a relatively low conductivity, it might attribute to the compact structure weakened the

electronic transport through the active materials, and subsequently the more load of the active material made the capacitance get diminished.