Electronic Supplementary Information (ESI)

Synthesis of Curly Graphene Nanoribbon/Polyaniline/MnO_2 Composite and Its Application in Supercapacitor

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The amount of manganese dioxide in the nanocomposite was measured by EDS, and the result showed that the weight fraction of Mn was 11.29 wt%, representing 16.01 wt% of MnO_2 in the composite.

Table S1 EDS result of the CGNR/PANI/MnO_2 composite

Element	Wt%	At%
C K	75.93	86.08
N K	2.00	1.94
O K	10.78	9.18
Mn K	11.29	2.80

The MnO_2 fraction in the CGNR/PANI/MnO_2 composite can be altered by adjusting the amount of precursor. When the amount of precursor was halved (termed as sample 1) and doubled (termed as sample 2), the MnO_2 fraction in the CGNR/PANI/MnO_2 composite was decreased and increased respectively. The electrochemical performances of the three samples were evaluated by cyclic voltammetry (CV) and galvanostatic charge–discharge testing. Fig. R4a showed all the three samples displayed analogous rectangle shape, indicating good supercapacitive characteristic. However, when the amount of precursor was halved (sample 1) or doubled (sample 2), the current density reduced, indicating the decrease in the specific capacitance. The galvanostatic charge/discharge curves in Fig. R4b showed similar result, and the optimized MnO_2 fraction sample showed the highest specific capacitance of 496 F g^{-1}, comparing to the specific capacitances 351 and 246 F g^{-1} for the sample 1 and sample 2 respectively. Therefore, the amount of MnO_2 in the CGNR/PANI/MnO_2 composite was optimized.

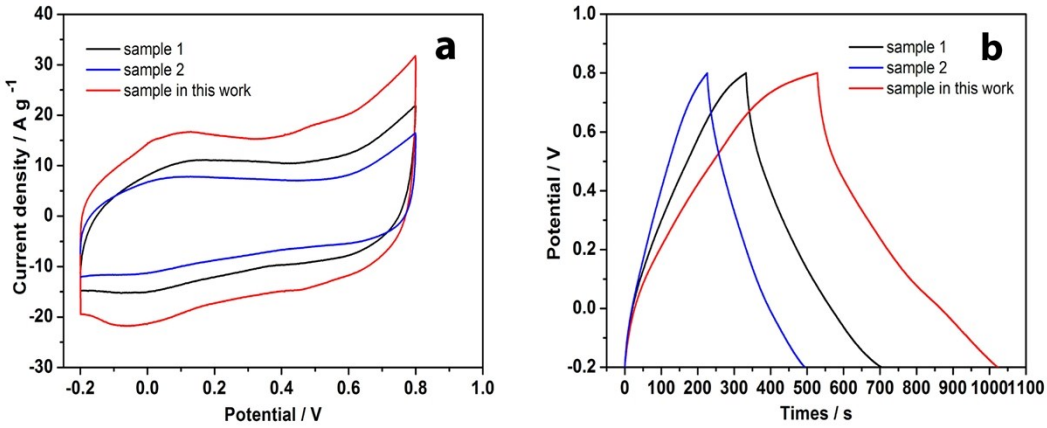

Figure S1 (a) Cyclic voltammograms at a scan rate of 50 mV s^{-1} and (b) galvanostatic charge/discharge curves at 1 A g^{-1} for the three samples.