Supporting information

A facile approach for fabrication of mechanically strong graphene/polypyrrole films with large areal capacitance for supercapacitor applications

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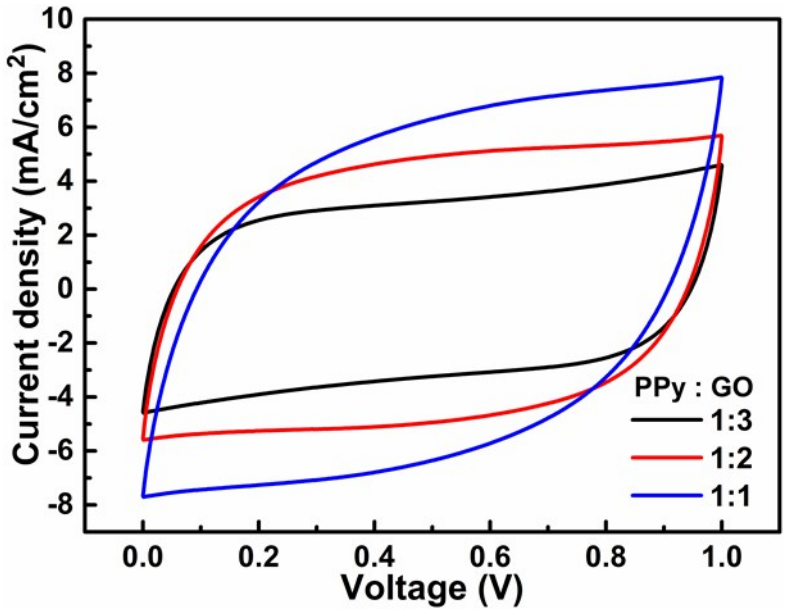

Figure 1 CV curves of the supercapacitor based on composite films with different weight ratio between PPy NPs and GO at a scan rate of 50 mV/s in 1M Li_2SO_4.

Table S1 Comparison of mechanical and capacitive properties of the Er-GO-PPy films with those of some reported graphene-based composite films.

	Mechanical properties		Capacitances		Relaxation time constant (s)
	Fracture Strength (MPa)	Young's Modulus (MPa)	Areal Capacitance (mF/cm^2)	Gravimetric capacitance (F/g)	
Er-GO-PPy films reported in this paper	16.89	11.77	216	110	2.51
Flexible graphene-cellulose paper (ref 39)	8.67	-	81	120	-
Graphene/PPy nanofiber films (ref 23)	35.0	2.1	-	345	-
Graphene/polyaniline films (ref 45)	-	-	67.2	-	0.316
Graphene/PEDOT films (ref 46)	-	-	12.2	-	-
Electrochemically deposited PPy/GO films (ref 47)	-	-	152	-	-
Flexible graphene/PPy membranes (ref 36)	-	-	175	284	-