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Supporting Information:

Colloidal graphene oxide/polyaniline nanocomposite and its electrorheology

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Experimental Section

1.1. Preparation of CGO:

3g natural graphite powder was added to 210 ml H_2SO_4 (98%) (in an ice bath), then 9g $KMnO_4$ and 1 g $NaNO_3$ were added gradually. The mixture was stirred for 2h, then 210ml Di-water was slowly added and the mixture was maintained at that temperature for 30 min. After that, 30% H_2O_2 solution was added into the solution until the color turned to brilliant brown indicating fully oxidized graphite. The as-obtained graphite oxide slurry was exfoliated to generate graphene oxide nanosheets by sonication at 60 °C using an ultrasonic generator (28 KHz, 600W, Kyungil Ultrasonic Co., Korea) for 1 h. Finally, the mixture was separated by centrifugation, washed repeatedly with 5% HCl and acetone, and then dried in a vacuum oven at 60 °C for 24 h.

1.2. Preparation of CGO/PANI nanocomposites

CGO (0.3 g) was dispersed in 120 ml Di-water with the aid of ultrasonic generator for 1 h, and then a dark brownish colloidal system was obtained. After stirring for 10 min, 0.28g aniline and 50ml Di-water containing 0.86g ammonium per sulfate (APS) were added into the above-mentioned CGO. The polymerization was allowed to proceed for 24 h at room temperature with a continuous stirring. The product obtained was filtered, washed with Di-water, and then dried at 60°C under vacuum for 24 h.

Table S1 Electrical conductivity of graphite, CGO, pure PANI, and the nanocomposites at room temperature

Materials	Electrical conductivity(S/cm)
Graphite	$6.7x10^{2}$
CGO	$6x10^{-6}$
Pure PANI	$3x10^{-3}$
CGO/PANI nanocomposite	$2x10^{-9}$

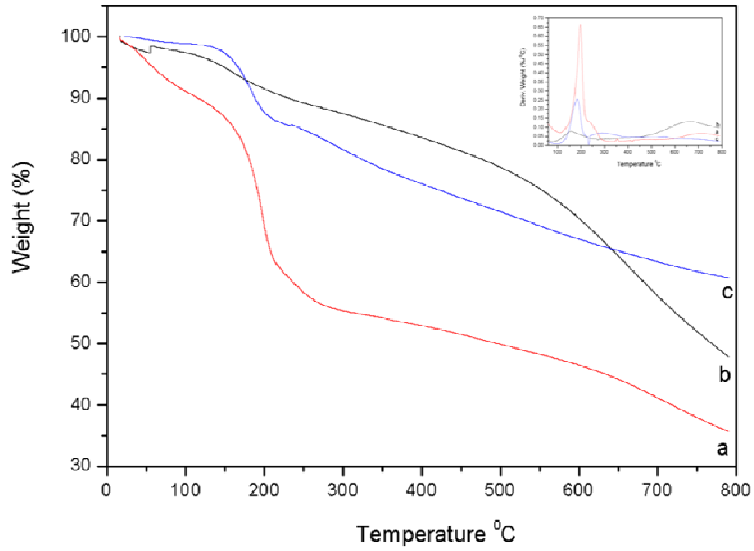

Fig.S1. (1)TGA curves of (a) CGO; (b) pure PANI (c) CGO/PANI nanocomposite

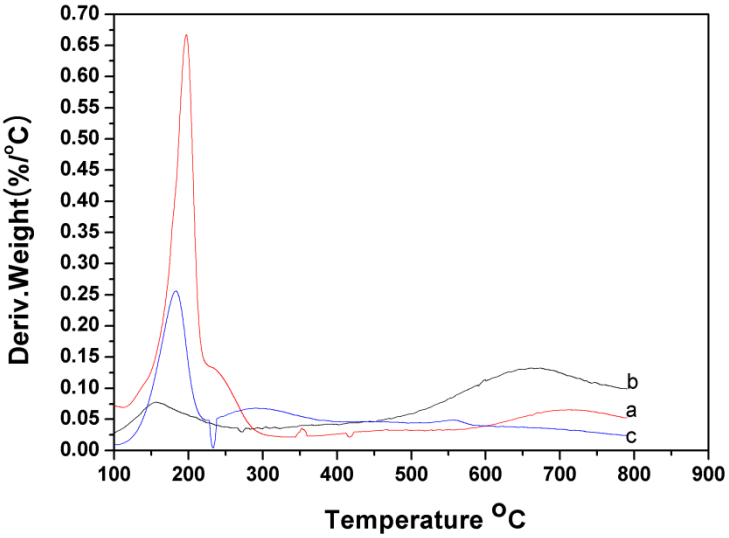

Fig.S1. (2) Temperature-Derivative Weight curves of (a) CGO; (b) pure PANI (c) CGO/PANI nanocomposite

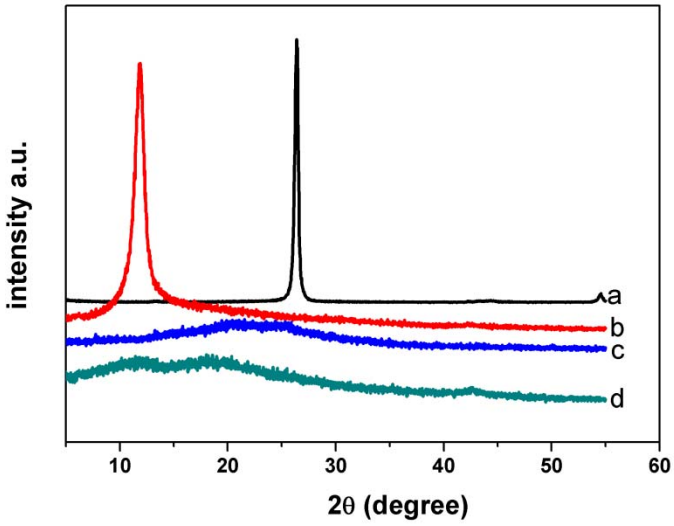

Fig.S3. XRD patterns of (a) graphite (b) CGO (c) pure PANI (d) CGO/PANI nanocomposite

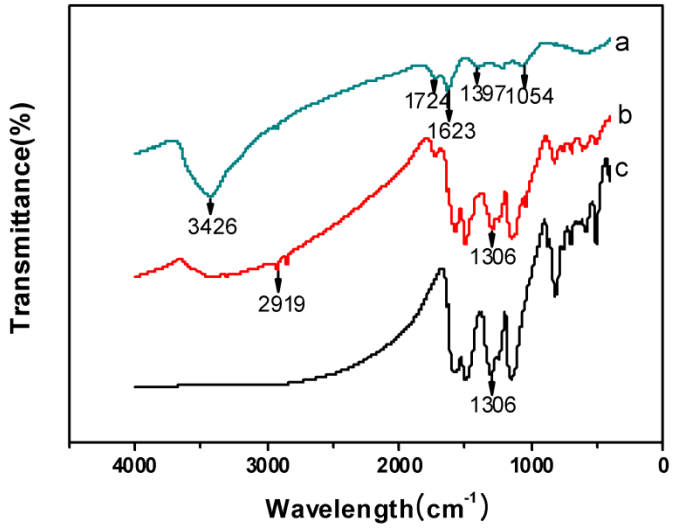

Fig.S4. FT-IR spectra of (a) CGO (b) CGO /PANI nanocomposite (c) pure PANI.

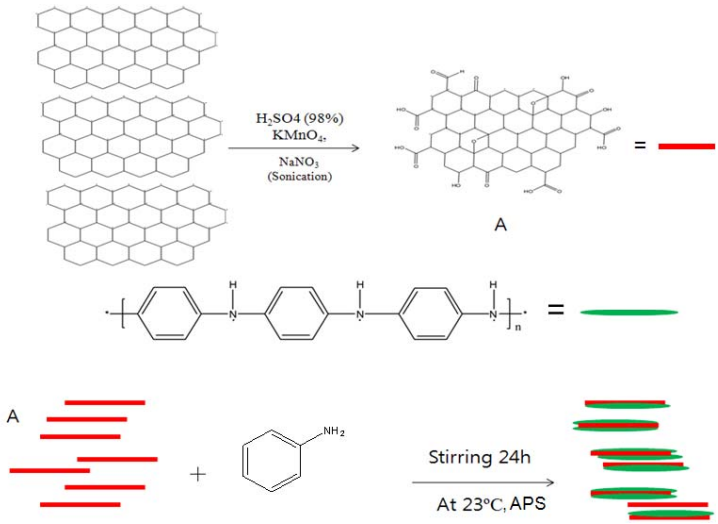

Fig.S5. The reaction process of colloidal graphene oxide/polyaniline nanocomposites