

Hierarchical Polyaniline Core-shell Nanocomposites Coated on Modified Graphite for Improved Electrical Conductivity Performance

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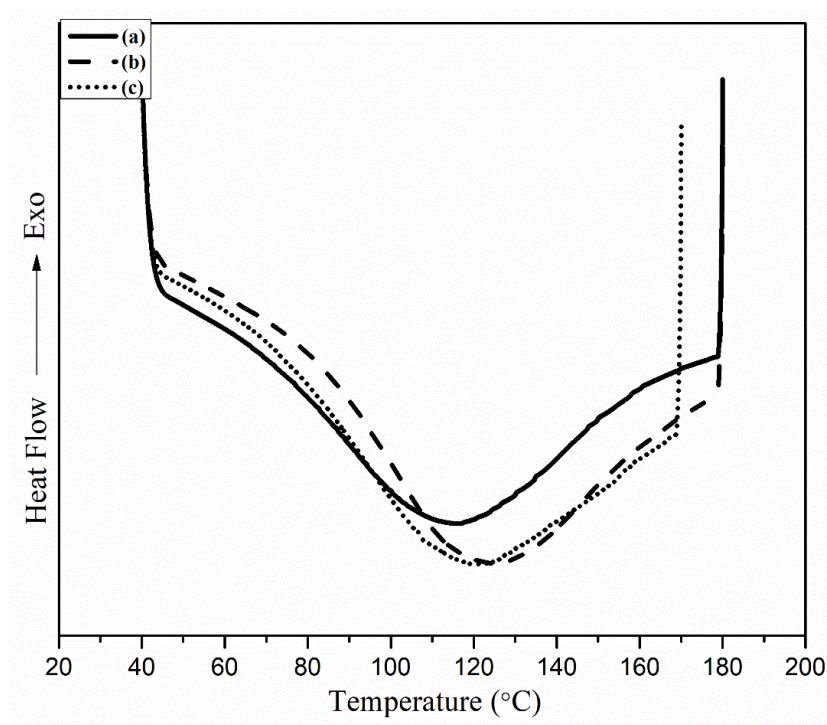


Figure S1. DSC thermograms showing T_g of: (a) Composite I; (b) Composite II; (c) Composite III.

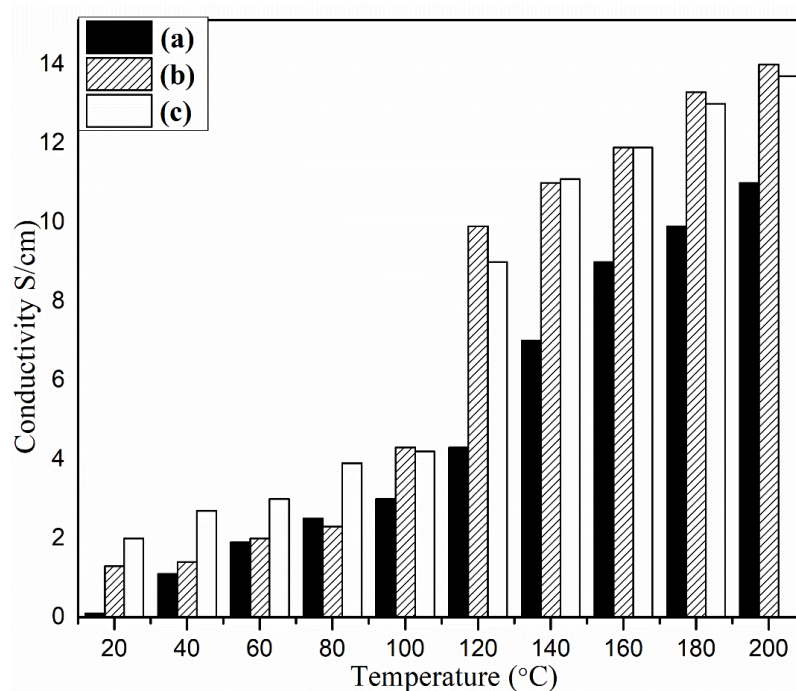


Figure S2. Electrical conductivity display of: (a) Composite I; (b) Composite II; (c) Composite III.

Table S1. FTIR peaks assignment for PANi@FG, PANi/PMMA@FG & PANi/PMMA/PPG-b-PEG-b-PPG@FG.

Sample	ν C-O (cm^{-1})	ν N-H (cm^{-1})	ν C-N (cm^{-1})	ω C-H (cm^{-1})	ν C=O (cm^{-1})	ν CH ₃ (cm^{-1})	Quinoid <i>vib</i> (cm^{-1})	ν_{as} C-H (cm^{-1})
FG	1050-1412	-	-	2969	1728	-	-	-
PANi@FG	1168	3438, 1167	1398	795	1707	-	1475	2850
PANi/PMMA@FG	1118	3425	1300	663	1721	2921, 1290	1479	2843
PANi/PMMA/PPG- b-PEG-b-PPG@FG	1117	3411	1300	669	1728	-	-	2898

ν = stretch, ω = out-of-plane bending and as = asymmetric

Table S2. TGA data of nanocomposites.

Sample	T ₀ (°C)	T ₂₀ (°C)	T _{max} (°C)	Y _c at 550 °C
PANi@FG	102	351	522	81
PANi/PMMA@FG	111	353	530	82
PANi/PMMA/PPG-b-PEG-b-PPG@FG	113	336	549	71

Table S3. DSC data of PANi/PMMA/PPG-b-PEG-b-PPG@FG composites.

Composite	T _g (°C)	T _m (°C)	T _c (°C)	ΔH _m (J g ⁻¹)	ΔH _c (J g ⁻¹)
PANi@FG	67, 114	143	173	0.403	0.793
PANi/PMMA@FG	74, 124	145	174	0.449	1.22
PANi/PMMA/PPG-b-PEG-b-PPG@FG	103, 120	160	178	1.02	2.06

Table S4. XRD parameters showing relative peak position of prepared multilayered nanocomposites.

Sample	Peak position	FWHM	d-spacing
PANi@FG	26.55	0.433	4.25
PANi/PMMA@FG	26.51	0.47	4.46
PANi/PMMA/PPG-b-PEG-b-PPG@FG	26.50	0.31	4.47
Composite I	26.65	0.47	4.43
Composite II	26.59	0.47	4.44
Composite III	26.53	0.47	4.46

Table S5. Textural information of PANi@FG, PANi/PMMA@FG & PANi/PMMA/PPG-b-PEG-b-PPG@FG.

Material	S _{BET} (m ² g ⁻¹)	D _p (nm)	V _p (cm ³ g ⁻¹)
PANi@FG	0.554	3.43	3.18
PANi/PMMA@FG	1.85	4.60	1.27
PANi/PMMA/PPG-b-PEG-b-PPG@FG	4.58	2.27	5.19

V_p: Pore volume; D_p: Pore size distribution; S_{BET}: BET surface area