Electronic Supplementary Information

Solid acid-reduced graphene oxide nanohybrid for enhancing thermal stability, mechanical property and flame retardancy of polypropylene

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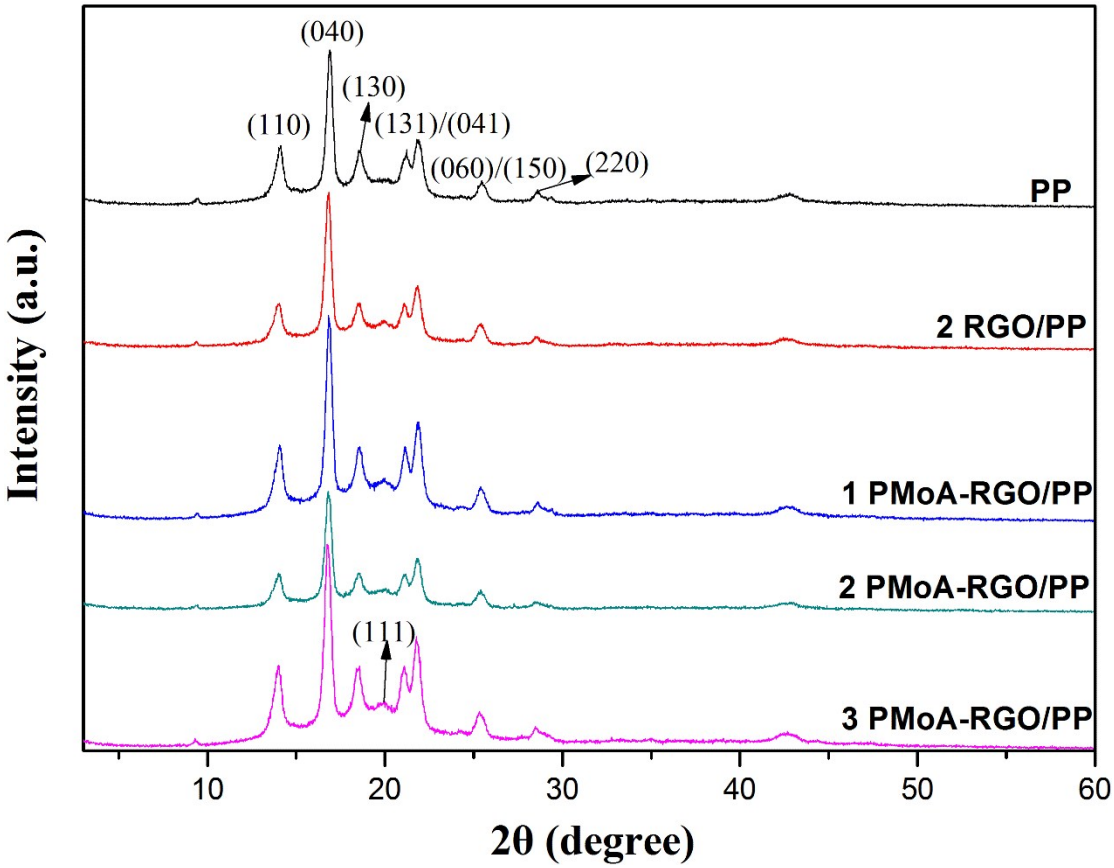

Fig. S1 XRD patterns of neat PP and its nanocomposites

Both neat PP and its nanocomposites exhibit the characteristic (110), (040), (130), (111), (131)/(041), (060)/(150) and (220) planes of α-crystal form of PP.[1]

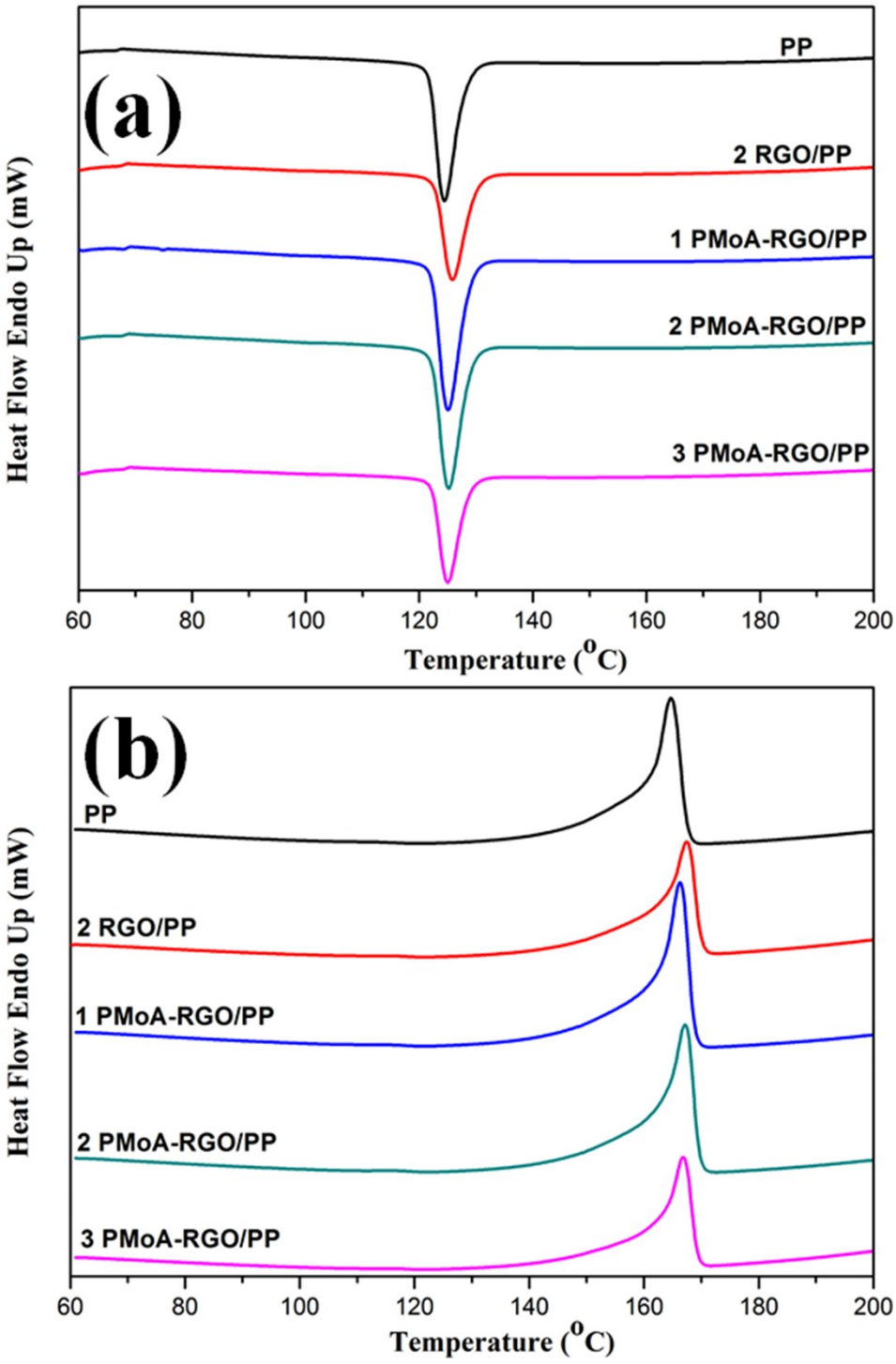

Fig. S2 DSC thermograms of cooling (a) and heating (b) scans of neat PP and its nanocomposites.

Table S1. DSC results of neat PP and its nanocomposites.

Sample	T_c (°C)	ΔH_c (J·g^{-1})	T_m (°C)	ΔH_m (J·g^{-1})	X_c (%)
PP	124.3	76.2	164.7	68.2	32.6
2 RGO/PP	125.9	77.1	167.6	66.7	32.6
1 PMoA-RGO/PP	125.1	78.4	166.4	68.9	33.3
2 PMoA-RGO/PP	125.1	77.4	167.2	66.3	32.4
3 PMoA-RGO/PP	124.9	77.4	166.9	64.8	32.0

Fig. S2 shows the DSC curves of crystallization and melting processes of PP and its nanocomposites. The maximum crystallization (T_c) and melting temperature (T_m), crystallization (ΔH_c) and melting enthalpy (ΔH_m), and degree of crystallinity (X_c) are listed in Table S1. X_c is calculated using the following equation: $X_c = \Delta H_m / (f\Delta H_0)$, where $\Delta H_0 = 209$ J·g^{-1} is the theoretical melting enthalpy of 100% crystalline PP,[2] and f is the weight fraction of PP in the nanocomposite. The incorporation of these nanomaterials is observed to exert little effect on the crystallization, melting behavior and crystallinity of PP.

Reference

1 B. H. Yuan, C. L. Bao, L. Song, N. N. Hong, K. M. Liew and Y. Hu, *Chem. Eng. J.*, 2014, **237**, 411.

2 Y. Li, J. Zhu, S. Wei, J. Ryu, L. Sun and Z. Guo, *Macromol. Chem. Phys.*,

2011, **212**, 1951.