Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Crosslinked reduced graphene oxide/polymer composites via *in situ* synthesis by semicontinuous emulsion polymerization

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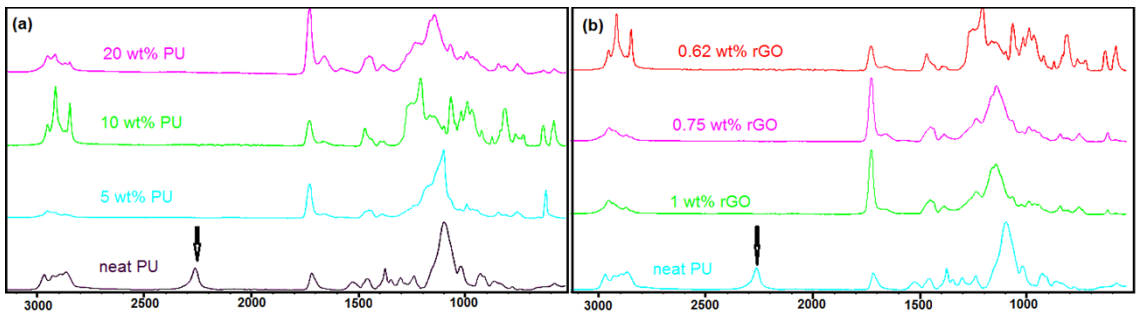

Figure 1s. Comparison of FTIR spectra of nanocomposites and the neat PU prepolymer: (a) at constant rGO content of 0.63 wt% and different PU loadings; and (b) at constant PU content of 10 wt% and different rGO loadings. The arrow points out the characteristic vibration of free NCO functionalities in PU. The absence of this peak in FTIR spectra of nanocomposites indicates full consumption of NCOs during composites synthesis.

The mean particle diameters of the hybrid latexes were measured by using dynamic light scattering (Zetasizer Nano Z, Malvern Instruments). The samples were prepared by diluting one drop of latex in deionized water. The particle diameters reported are the z-average of two measurements. The hybrid latexes have small sedimentation on the bottom of the vials after storage of almost one year. Table S1 presents three results for

each latex; the mean particle diameter just after reaction, the one from the dispersed phase after almost one year of storage and the one after redispersing the whole latex after the storage.

Table S1. Mean particle diameter of the latexes, just after reaction and after one year of storage.

PU content (%wt.)	rGO content (%wt.)	Particle size /Polydispersity index As obtained latex (nm)	Particle size /Polydispersity index Dispersed part after storage (nm)	Particle size /Polydispersity index Whole latex, after storage (nm)
0	0.62	104/0.216	Visible phase separation	
5	0.62	445/0.569	85/0.240	842/0.873
10	0.62	930/0.795		
20	0.62	220/0.854		
10	0.75	176/0.730	123/0.363	231/0.372
10	1	90/0.331	81/0.373	93/0.351