Supplementary Information

Graphene materials strengthen aqueous polyurethane adhesives

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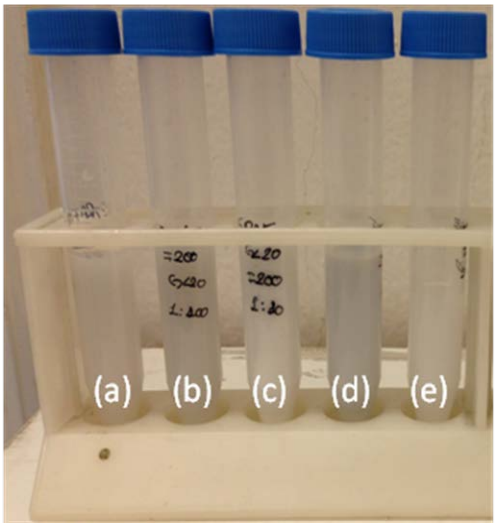

Figure SI1. Camera picture of dispersions of aqueous composite TP adhesive containing: (a) $GP_{0.01\ wt.\%}$; (b) $GP_{0.1\ wt.\%}$; (c) $GO_{0.01\ wt.\%}$; (d) $GO_{0.1\ wt.\%}$; (e) no additive.

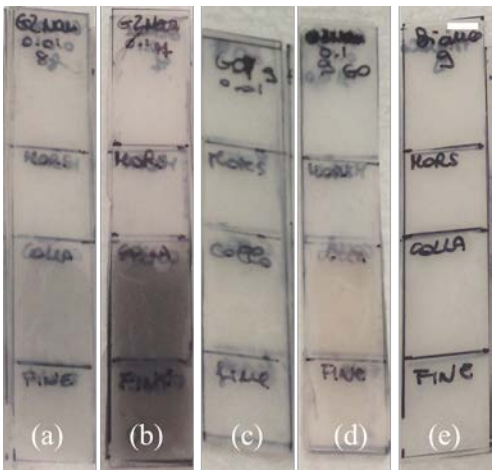

Figure SI2. Camera picture of polyurethane strips glued with aqueous composite TP adhesives containing: (a) $GP_{0.01\ wt.\%}$; (b) $GP_{0.1\ wt.\%}$; (c) $GO_{0.01\ wt.\%}$; (d) $GO_{0.1\ wt.\%}$; (e) no additive.. Scale bar: 5 mm.

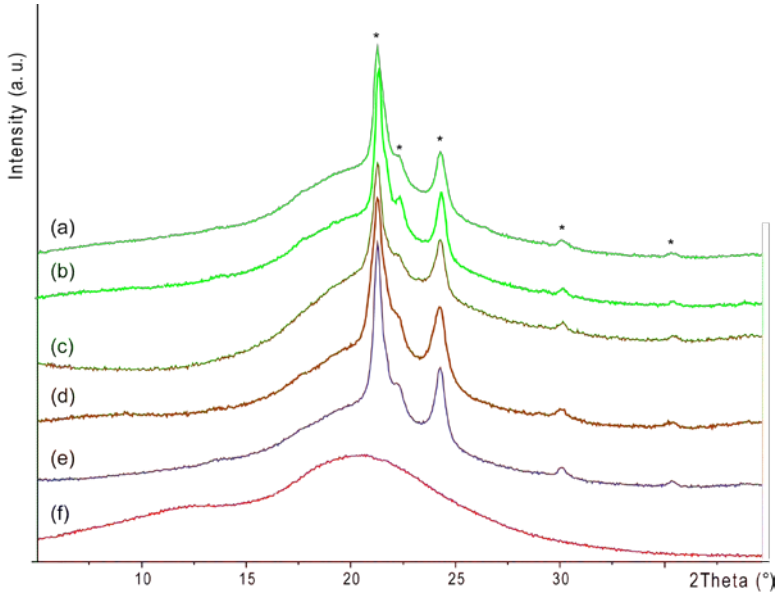

Figure SI3. X-ray diffraction patterns of films from composite aqueous TP adhesive containing (a) $GP_{0.01\ wt.\%}$; (b) $GP_{0.1\ wt.\%}$; (c) $GO_{0.01\ wt.\%}$; (d) $GO_{0.1\ wt.\%}$; (e) no additive. (f) Surface of the PU strip. The asterisks indicate the diffraction peaks of silicon dioxide (powder diffraction reference code: 01-085-0621).

Table SI1. Composition of the GP and GO doped adhesives. GP and GO indicate carboxyl functionalized graphene platelets and graphene oxide sheets, respectively.

code	GP	GO
$GP_{0.01\%}$	0.01 wt. %	
$GP_{0.1\%}$,	0.1 wt. %	
$GO_{0.01\%}$		0.01 wt. %
$GO_{0.1\%}$.		0.1 wt. %

Table SI2. Assignment for some of the observed ATR FTIR bands.

Band location (cm^{-1})	Chemical structure and vibration
3325	(N-H) stretch
2973	(C-H) stretch, asymmetric
2865	(C-H) stretch, symmetric
1725	(C = O) stretch
1639	(OCONH)
1538	(N-H) deformation
1088	(OCONH) in plane