

## Supplementary Information

# Graphene materials strengthen aqueous polyurethane adhesives

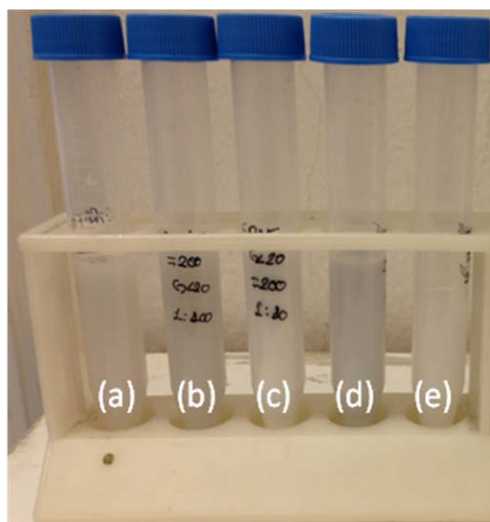
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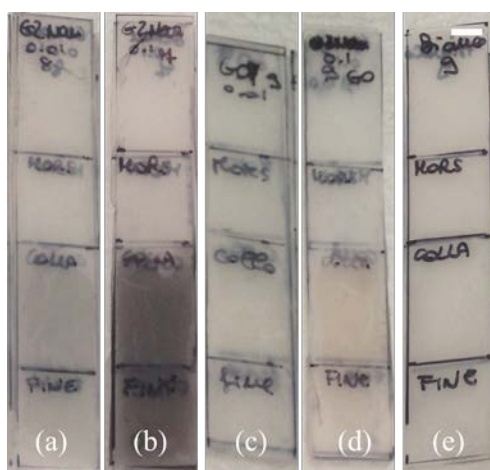
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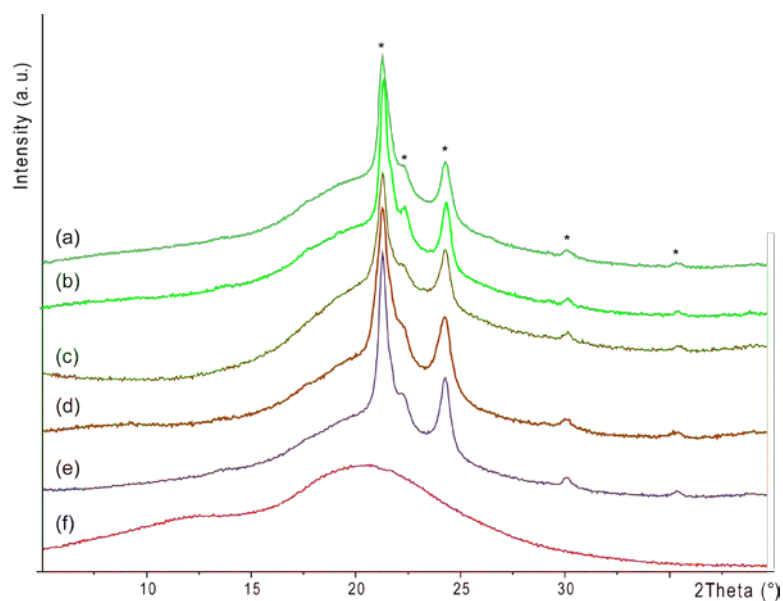
Figure SI1	p.	SI2
Figure SI2		SI2
Figure SI3		SI3
Table SI1		SI4
Table SI2		SI4



**Figure S11.** Camera picture of dispersions of aqueous composite TP adhesive containing: (a) GP<sub>0.01</sub> wt.% ; (b) GP<sub>0.1</sub> wt.% ; (c) GO<sub>0.01</sub> wt.% ; (d) GO<sub>0.1</sub> wt.% ; (e) no additive.



**Figure S12.** Camera picture of polyurethane strips glued with aqueous composite TP adhesives containing: (a) GP<sub>0.01</sub> wt.% ; (b) GP<sub>0.1</sub> wt.% ; (c) GO<sub>0.01</sub> wt.% ; (d) GO<sub>0.1</sub> wt.% ; (e) no additive.. Scale bar: 5 mm.



**Figure SI3.** X-ray diffraction patterns of films from composite aqueous TP adhesive containing (a) GP<sub>0.01</sub> wt.%; (b) GP<sub>0.1</sub> wt.%; (c) GO<sub>0.01</sub> wt.%; (d) GO<sub>0.1</sub> 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 S11.** 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 <sub>0.01%</sub>	0.01 wt. %	
GP <sub>0.1%</sub> ,	0.1 wt. %	
GO <sub>0.01%</sub>		0.01 wt. %
GO <sub>0.1%</sub> .		0.1 wt. %

**Table S12.** Assignment for some of the observed ATR FTIR bands.

Band location (cm <sup>-1</sup> )	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