coatings

Surface Modification of Graphene for Use as a Structural Fortifier in Water-Borne Epoxy Coatings

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Supplementary materials

SEM was used to analyze the geometry of pristine Graphene and GO. The size of pristine graphene is about 1–6 μm with a standard deviation as 0.15. The geometry of reference GO is similar with pristine G with a diameter from 1–8 um with a standard deviation as 0.16. As shown in Figure S1c, three obvious peak were observed at wavenumber 1214, 1598 and 3370 cm^{-1}, corresponding to C–O, C=C and O-H bonders. These groups provide opportunities for GO the combination with epoxy binder during curing process. From Raman spectrum of the reference GO, the I_D/I_G is 0.92, indicate the oxidant group introduce defects on GO.

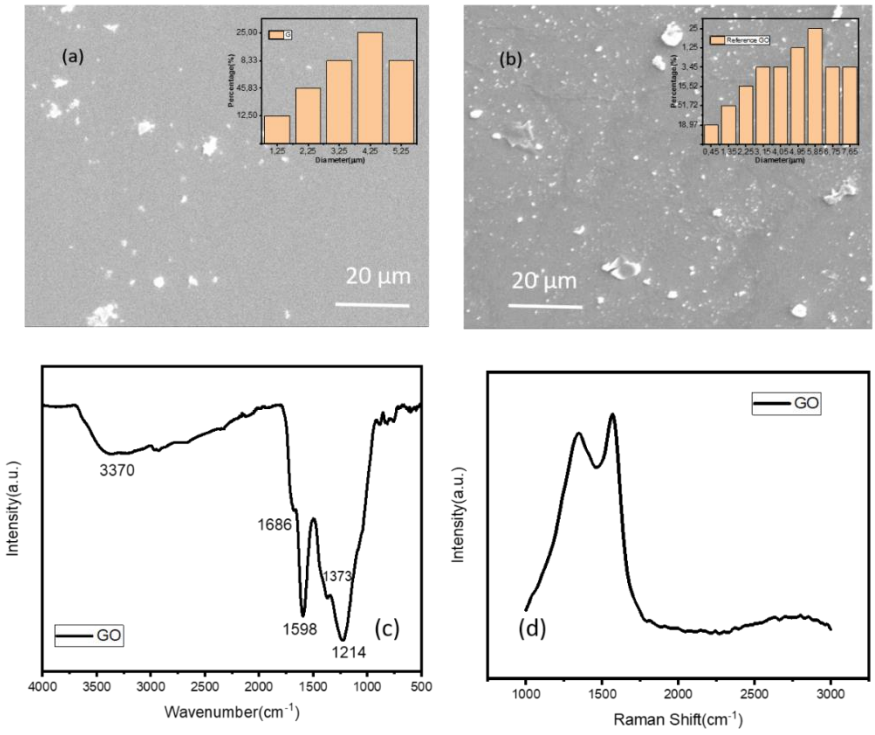

Figure S1. (**a**) SEM images of the pristine Graphene (the inset shows its size distribution); (**b**) SEM image of the reference GO (the inset shows its size distribution); (**c**) The infrared spectrum of GO; (**d**) Raman spectrum of GO.

Figure S2 shows the abrasion test result of pristine epoxy without additive. The COF for pristine binder is 0.75 under a dry contact with 4 N, 200 rpm.

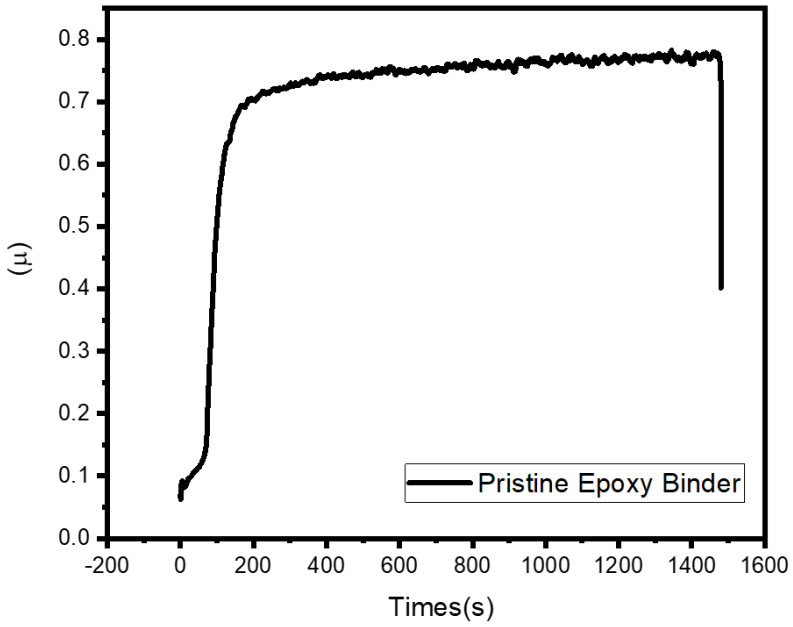

Figure S2. Abrasion test on stainless-steel plates of pristine epoxy binder (4 N, 200 rpm, 30 min, dry contact).