Preparation of UV-Curable Functionalized Phosphazene-containing Nanotubes/Polyurethane Acrylate Nanocomposite Coatings with Enhanced Thermal and Mechanical Properties

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Thermal properties of PUA and f-PZS/PUA nanocomposites

DSC is performed to investigate the glass transfer process of f-PZS/PUA nanocomposites. Figure S4 plots the DSC curves and provides the glass transition temperature ($T_g$). It can be seen obviously that the $T_g$ values of the cured films decrease with increasing content of f-PZS nanotubes. When the f-PZS nanotubes content increases from 0.1 wt% to 3 wt%, the $T_g$ value of PUA nanocomposite film decreases from 12.80 °C to -3.03 °C, which has a similar trend to the $T_g$ results from the DMA test in the new manuscript (The temperature at the peak of loss factor tan $\delta$ curve is defined as the glass transition temperature ($T_g$)).
Figure S1. TGA curves of PUA and f-PZS/PUA nanocomposites under nitrogen atmosphere. (containing f-PZS/PUA-5.0 sample)
Figure S2. Storage modulus (E') curves of PUA and f-PZS/PUA nanocomposites as a function of temperature. (containing f-PZS/PUA-5.0 sample)
**Figure S3.** UV–Vis spectra of PUA and f-PZS/PUA nanocomposites. (containing f-PZS/PUA-5.0 sample)
Figure S4. DSC curves of PUA and f-PZS/PUA nanocomposites.