Supplementary Information

Assembling Graphene/Poly(vinyl alcohol) Hybrid Membrane at Liquid/Air Interface

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1. Optical images of GNS/PVA suspension

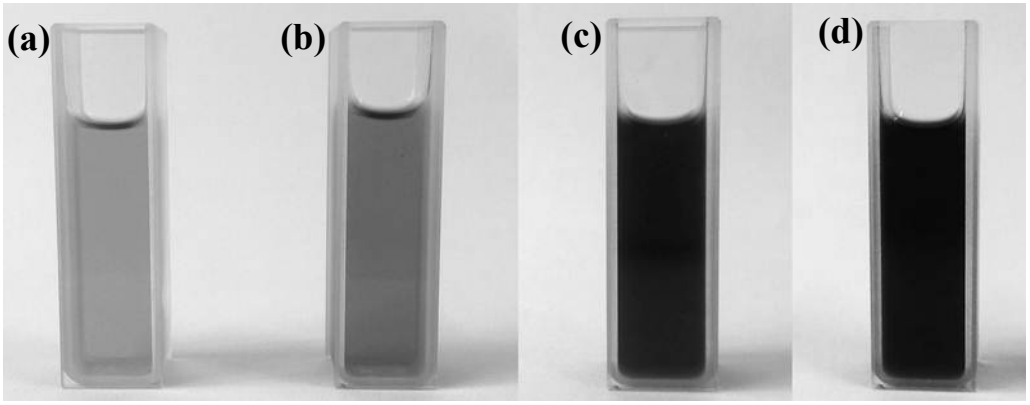

Figure S1 Optical images of GNS/PVA suspension with the GNS fractions of 0.5 wt% (a), 0.7 wt% (b), 6 wt% (c) and 20 wt % (d) .The above suspensions are stable and no deposits can be observed in couple of weeks.

2. UV-Vis-NIR spectra of GNS/PVA membranes with different GNS fractions

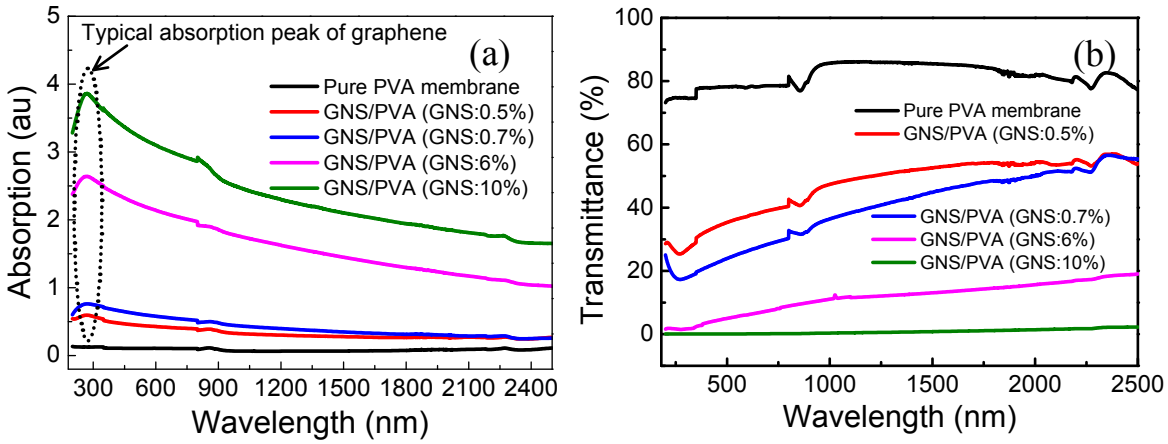

Figure S2 The absorption and transmittance spectra of PVA membrane and GNS/PVA hybrid membranes with different GNS fractions in the range of UV-Vis-NIR range. A typical absorption peak of graphene can be observed at the wavelength of ~265 nm[1], indicating the GNSs are well dispersed in the hybrid membranes.

3. Wettability tests

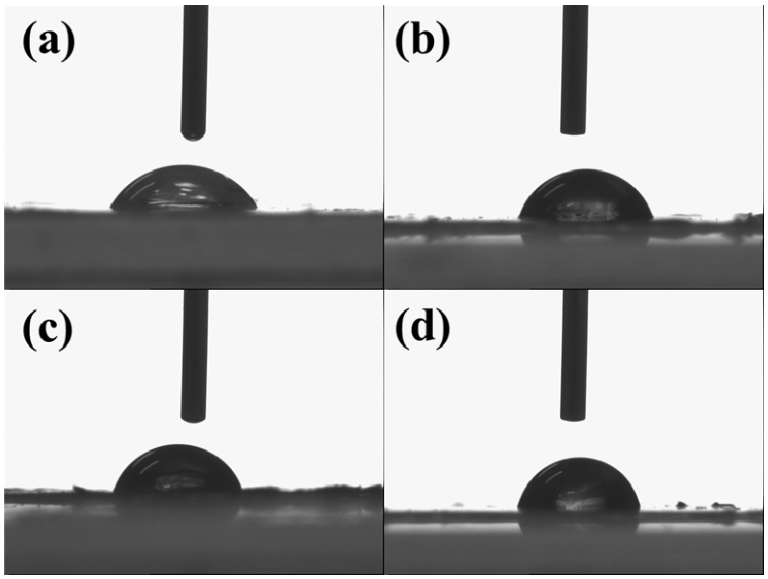

Figure S3 Contact angles of PVA membrane (a) and GNS/PVA hybrid membranes (b-d) with the GNS fractions of 2, 6 and 20 wt% respectively. The contact angles of these membranes (a-d) are 43°, 69°, 70° and 72° respectively.

4. Differential scanning calorimetry (DSC) measurements

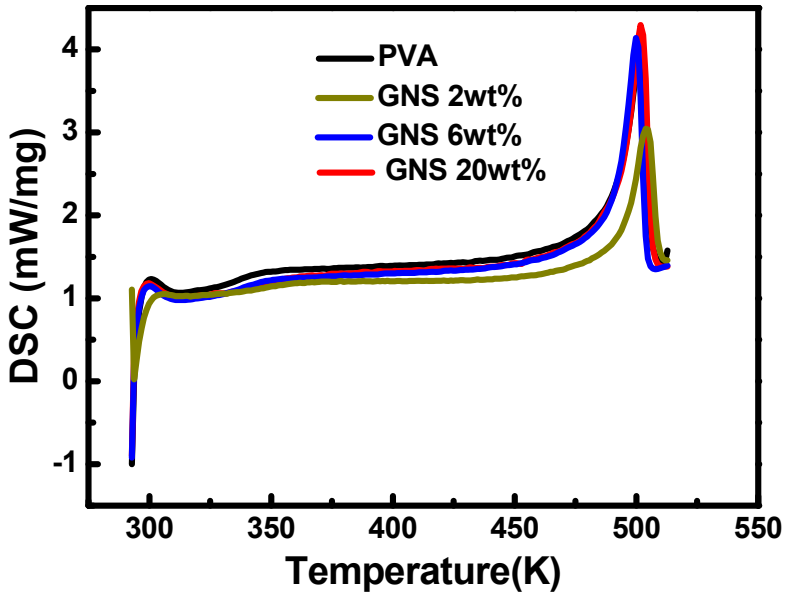

Figure S4 DSC profiles of PVA membrane and GNS/PVA hybrid membranes with different GNS fractions.

References:

[1] Kravets VG, Grigorenko AN, Nair RR, Blake P, Anissimova S, Novoselov KS, et al. Spectroscopic ellipsometry of graphene and an exciton-shifted van Hove peak in absorption. Phys Rev B 2010; 81:155413.