

Fig.S1 SEM images of ME/PDA/DT sponge with different magnification.

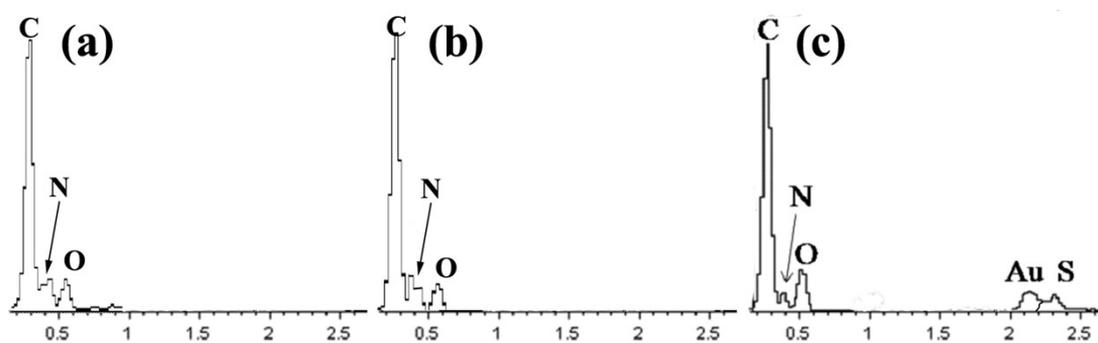


Fig.S2 EDS spectrums of ME sponge (a, without Au coating), ME sponge after first-step modification (b, without Au coating) and ME/PDA/DT sponge (c, with Au coating).

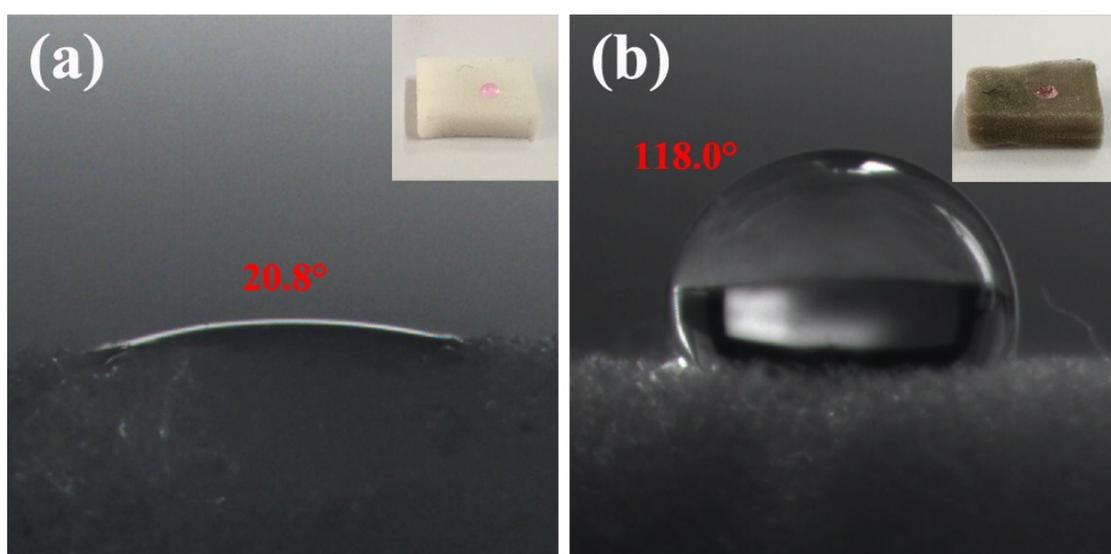


Fig.S3 Photographs of water contact angle of ME/DT (a) and ME/PDA film/DT sponge (b). Inset was photograph of water drop stained with oil red O on the surface of the corresponding sponge.

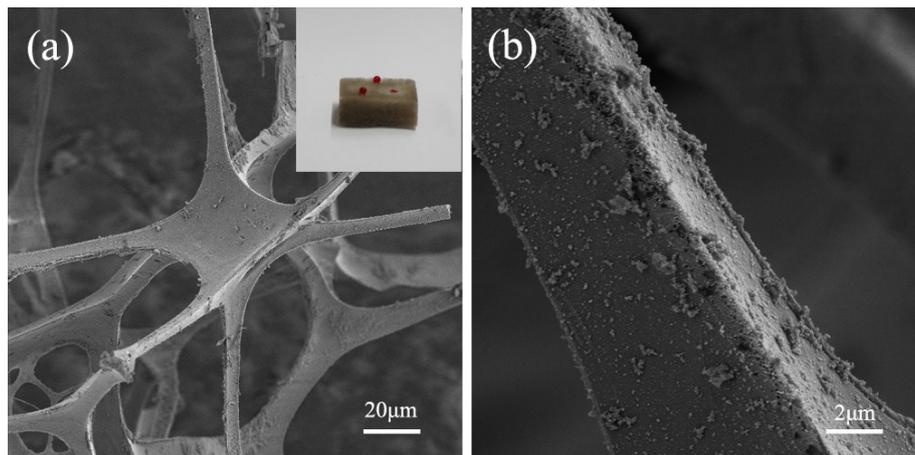


Fig.S4 SEM images of the sponge obtained with direct modification using the second-step with different magnification. Inset in (a) was photograph of water drop stained with oil red O on the surface of the obtained sponge.

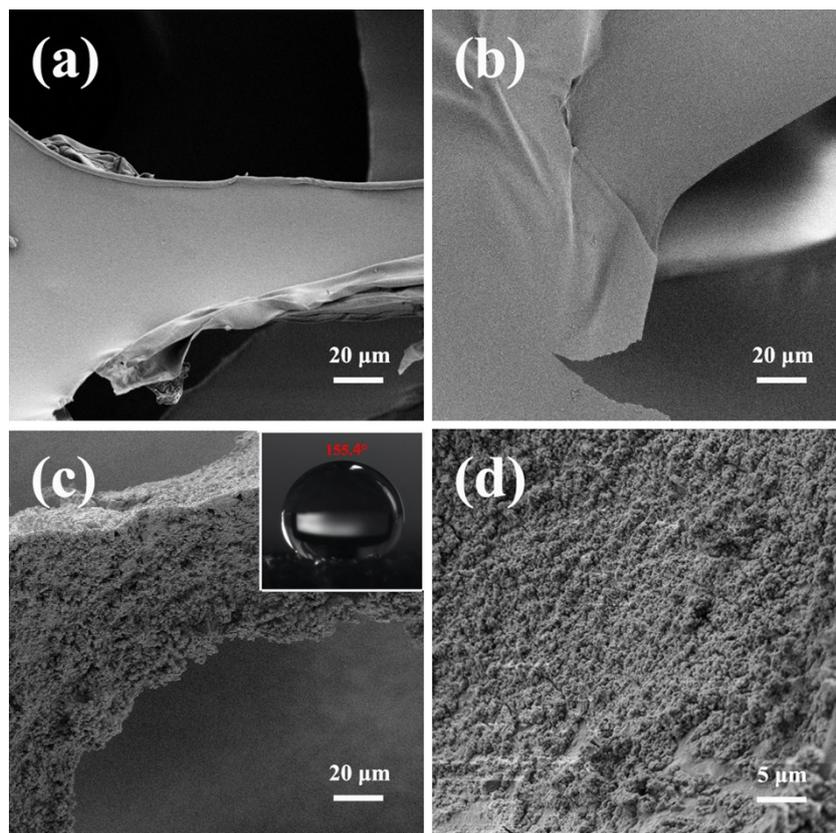


Fig.S5 SEM images of PU sponge (a), PU sponge after the first-step modification (b) and PU/PDA/DT sponge with different magnification (c, d). Inset in (c) was photographs of water content angle of PU/PDA/DT.

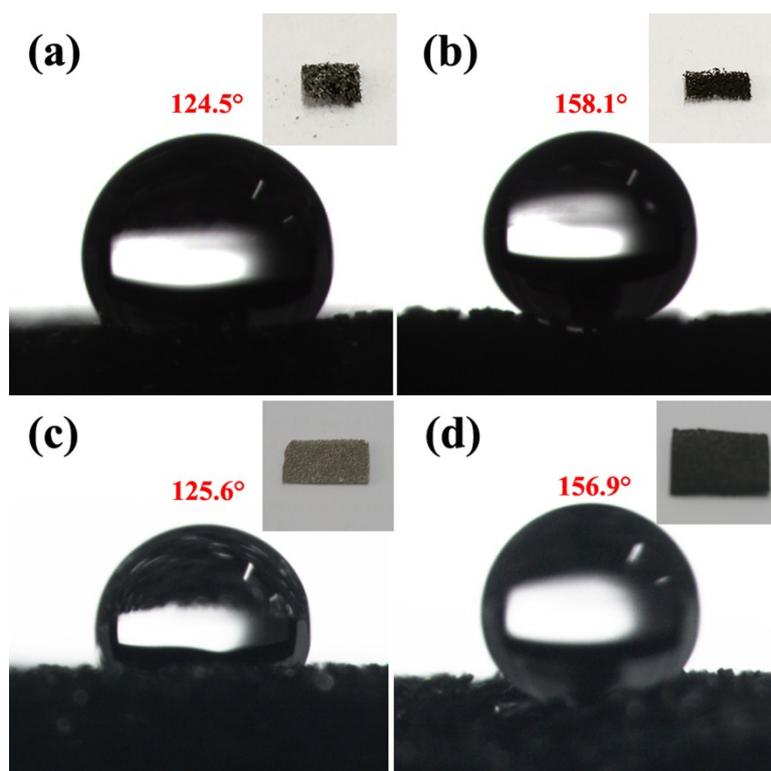


Fig.S6 Water content angle of 3D graphene (a), 3D graphene/PDA/DT (b), Ni form (c) and Ni form/PDA/DT (d).

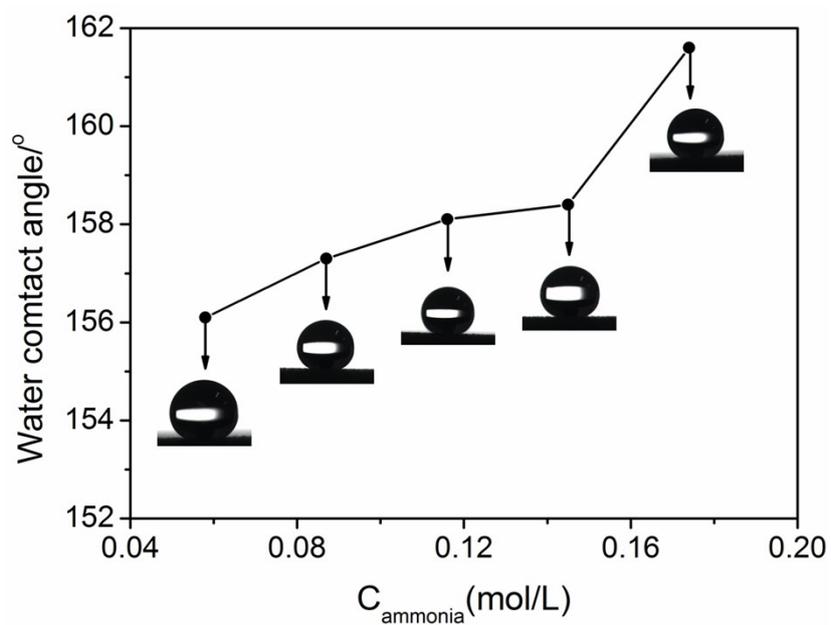


Fig.S7 Water content angle of ME/PDA/DT sponge with different concentration of ammonia.

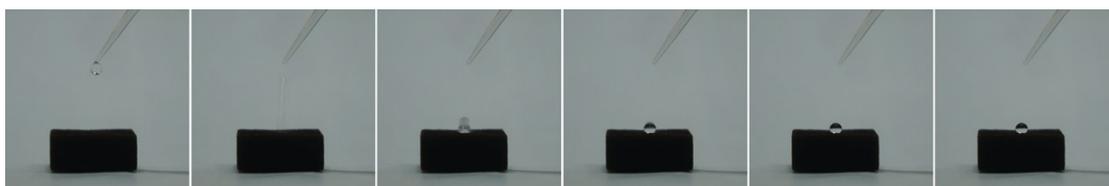


Fig.S8 Bouncing phenomenon of dropping water on the surface of ME/PDA/DT sponge.

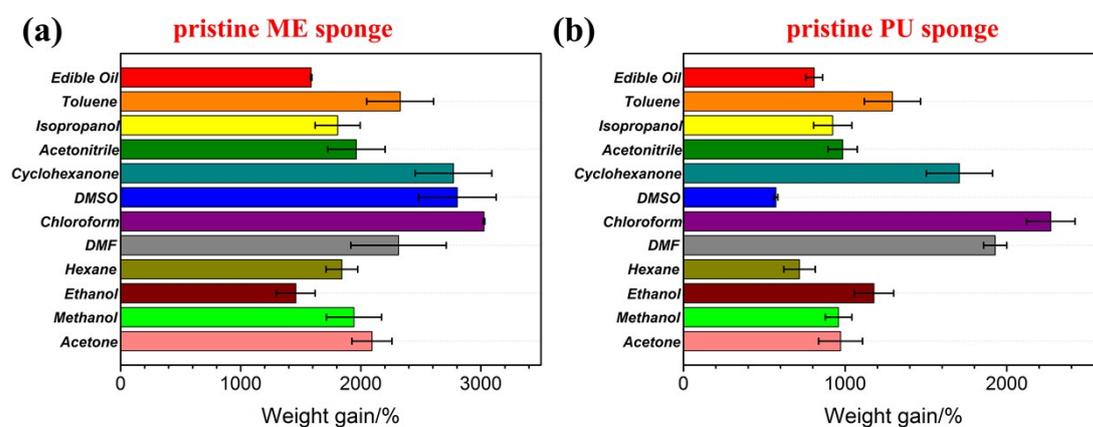


Fig.S9 Absorption capacity of the pristine ME sponge (a) and pristine PU sponge (b) for various organic solvents

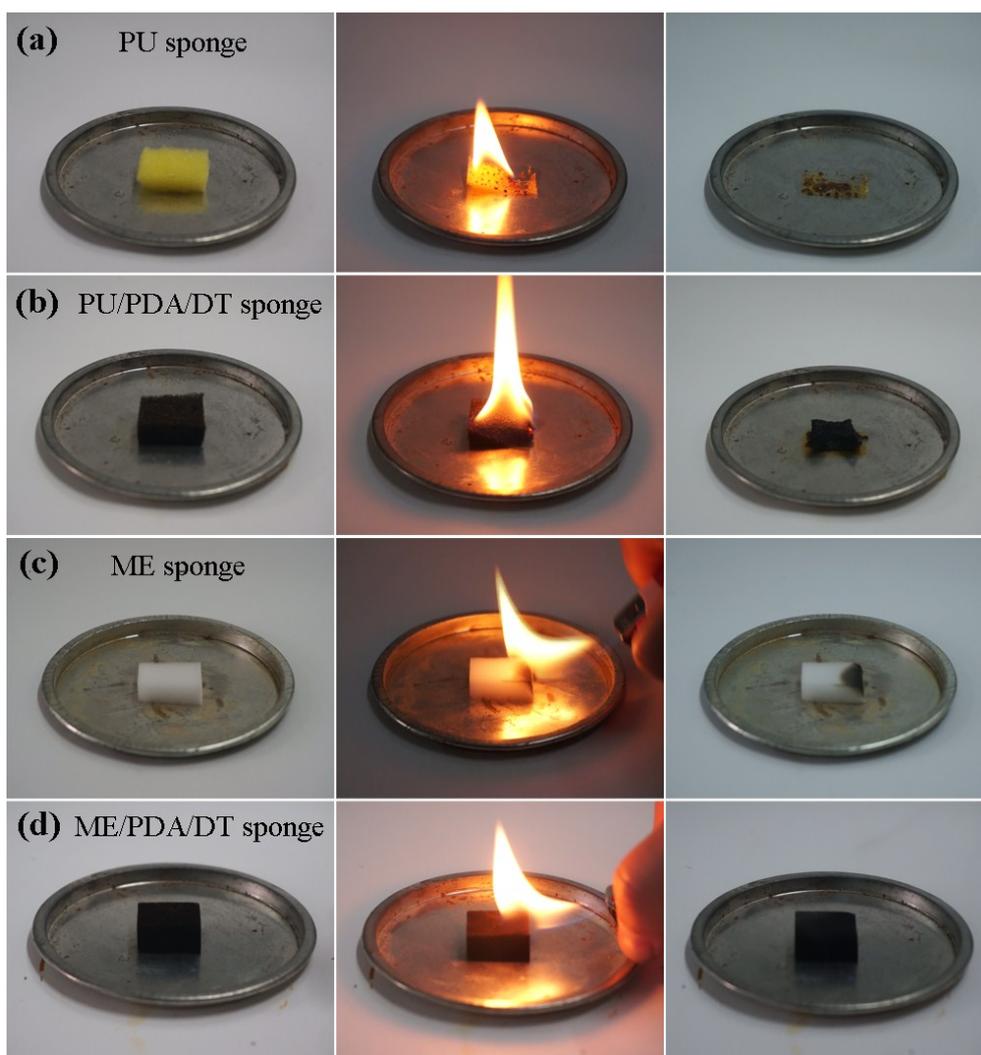


Fig.S10 The combustion process of PU sponge (a), PU/PDA/DT sponge (b), ME sponge (c), ME/PDA/DT sponge (d).

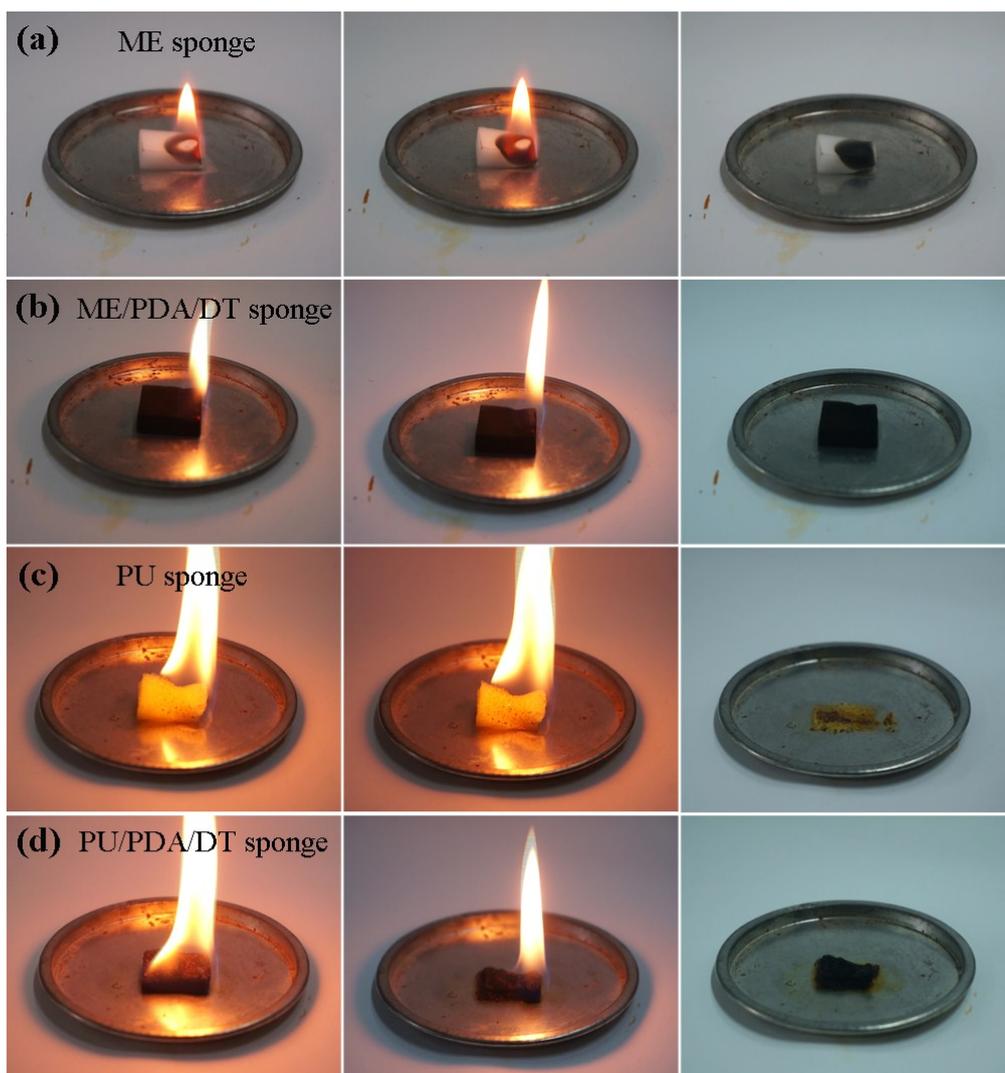


Fig.S11 The combustion process of (a) ME sponge, (b) ME/PDA/DT sponge, (c) PU sponge, (d) PU/PDA/DT sponge with absorbed n-hexane. The weight ratio of n-hexane to sponge was all set as 1:1.