Supporting Information

One-pot facile synthesis of PDMS/PDMAEMA hybrid sponges for surfactant stabilized O/W emulsion separation

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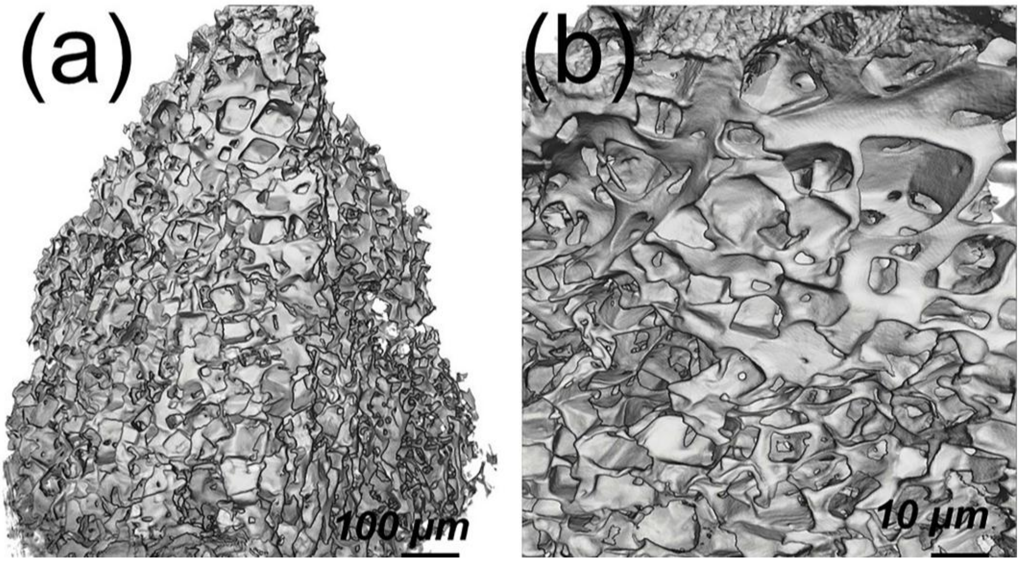

Fig. S1. 3D images of PDMS sponges, taken on a 3D X-ray microscope (Nanovoxel-2100, Sanying Precision Engineering Research Center, China).

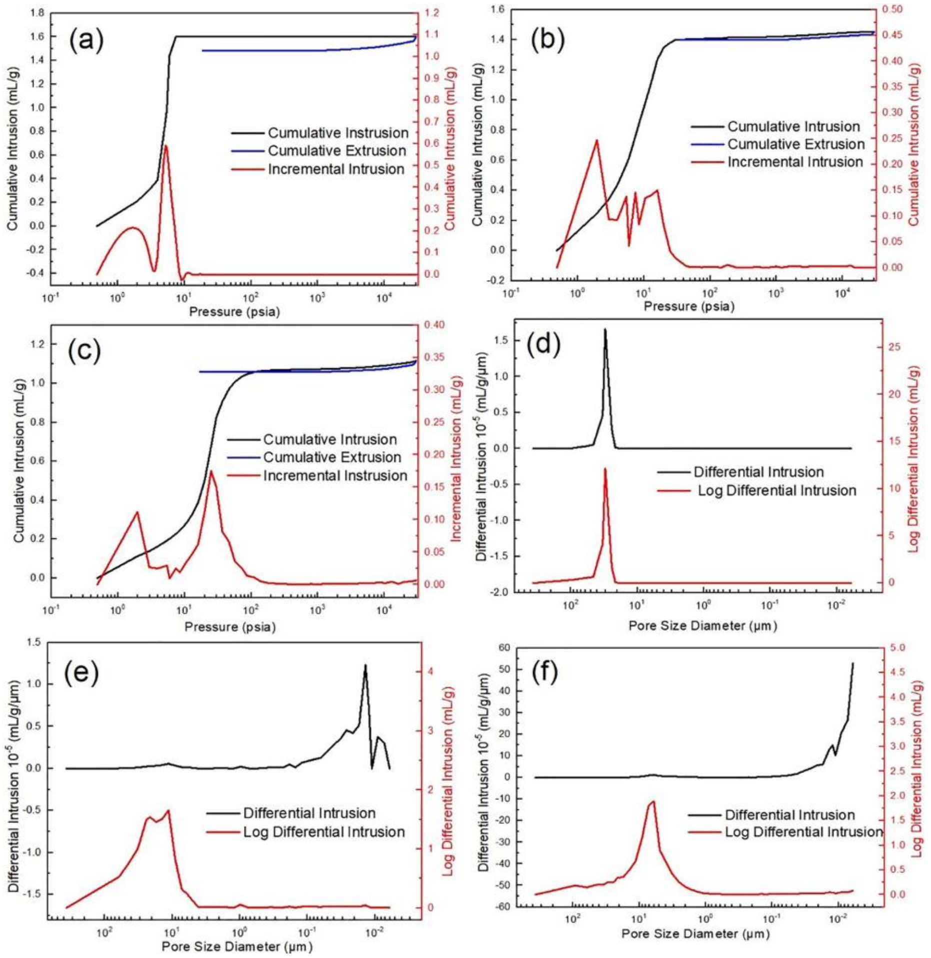

Fig. S2 (a-c) Mercury intrusion curves as a function of pressure of the PDMS, PDMS-MWCNTs$_{1.0\%}$ and HBNWs$_{40\%}$; (d-f) Pore size distributions of the PDMS, PDMS-MWCNTs$_{1.0\%}$ and HBNWs$_{40\%}$.

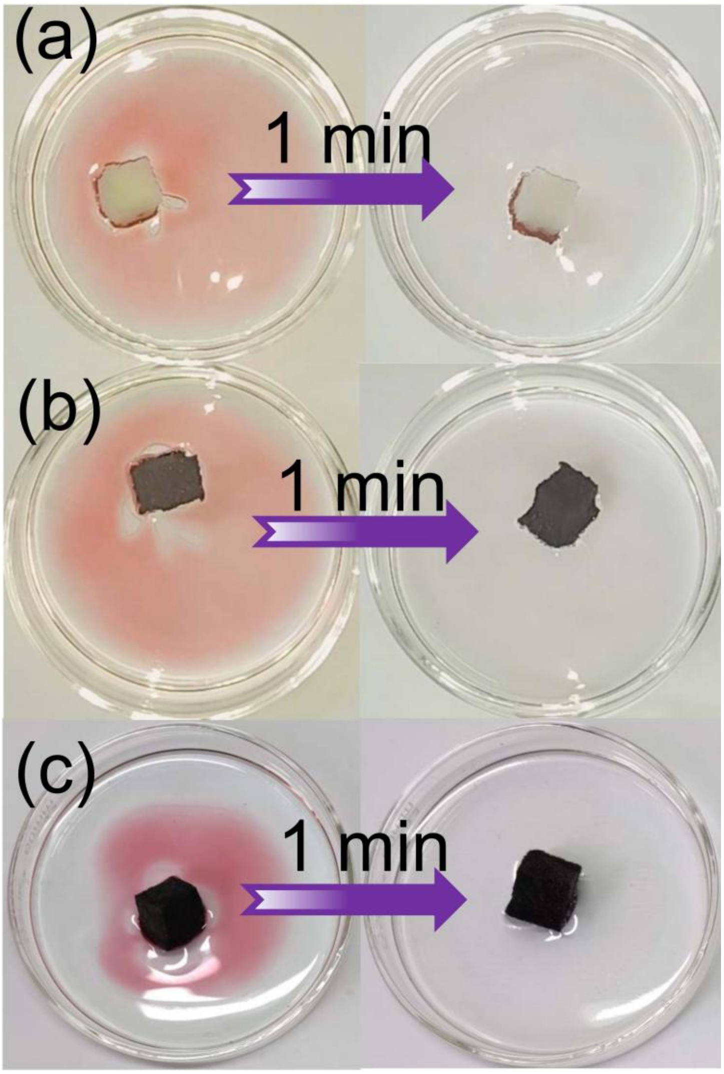

Fig. S3 (a-c) Oil/water mixture separation performance of PDMS, PDMS-MWCNTs$_{1.0\%}$ and HBNWs$_{50\%}$.

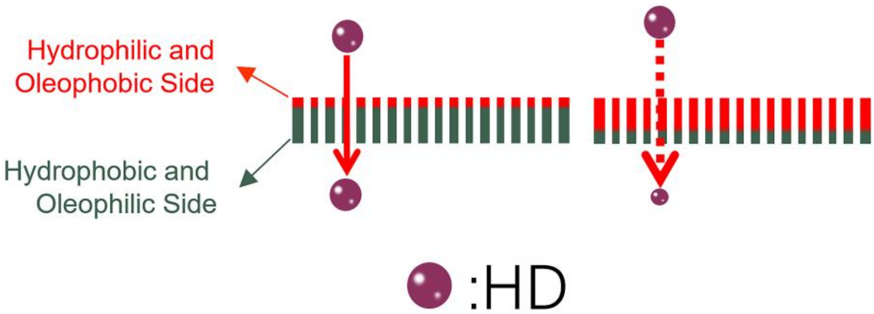

Fig. S4 Schematic illustration of Janus interface (in water environment)

For Janus interface, generally speaking, when lyophilic side is thin, liquid droplet can go through. If the lyophilic side is too thick, liquid droplet cannot go through or much slower. This phenomenon was affected by liquid surfaces tension and evaporation pressure, pore diameter of interface, interface surface tension and roughness, etc[1-3].

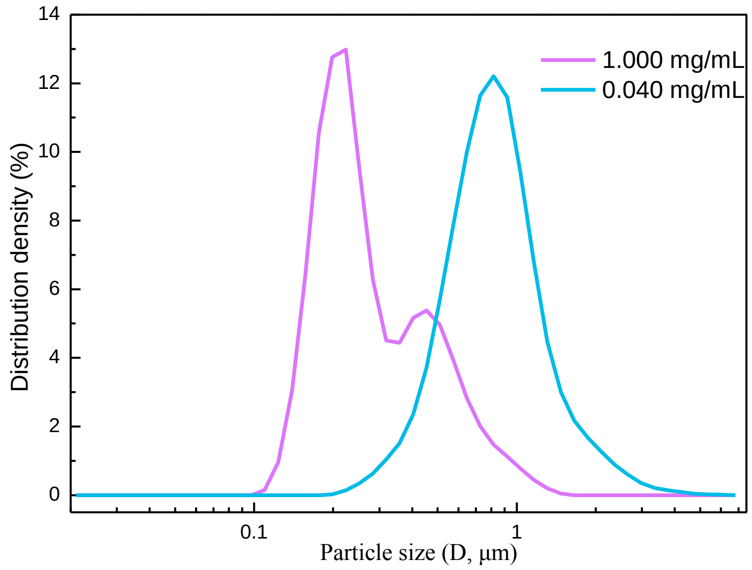

Fig. S5. Effect of surfactant concentration on emulsion particle size distribution

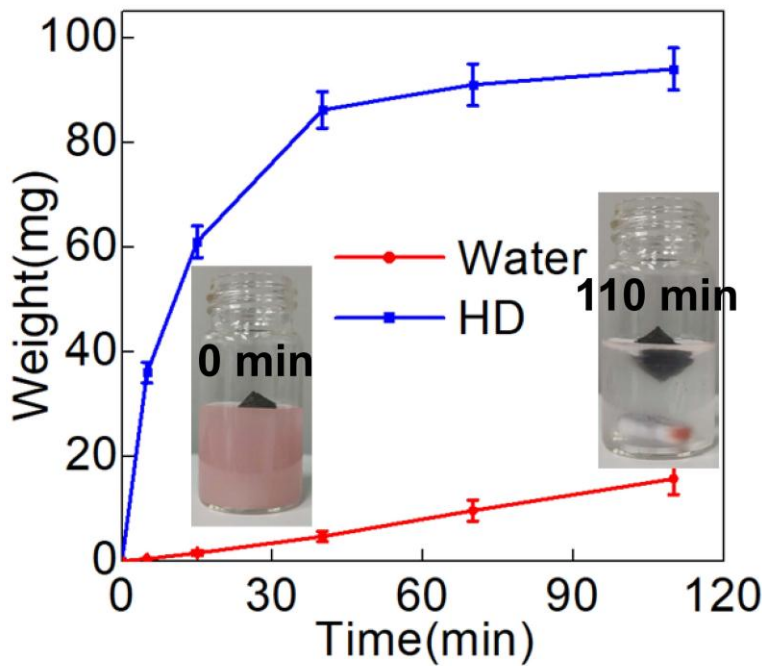

Fig. S6. Oil recovery performance of $HBNWs_{40\%}$ on low oil content emulsion

References

1. H. Yang, Y. Xie, et al., Advanced Materials, 2018, 1801495.
2. H. Wang, W. Wang, et al., Applied Surface Science, 2018, 455,924-930.
3. C. Zeng, H. Wang, H. Zhou and T. Lin, Advanced Materials Interfaces, 2016, 1600036.