Supporting Information

A Robust and stretchable Superhydrophobic PDMS/PVDF@KNFs membrane with Oil/Water Separation and Flame Retardancy

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This ESI contains:

Supplementary Figures

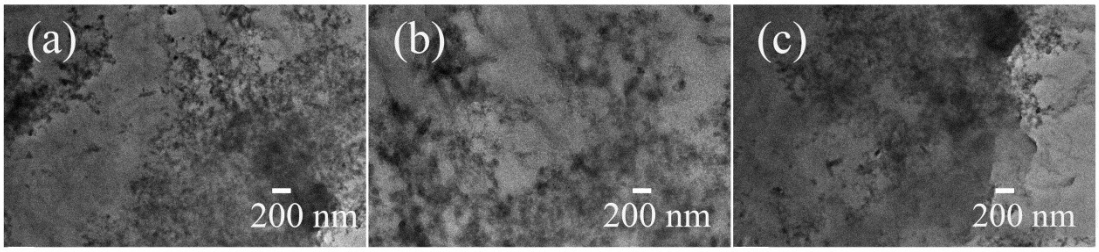

Fig. S1†. TEM images of Kevlar fibers (a), KNFs (b) and KNFs 2h (c).

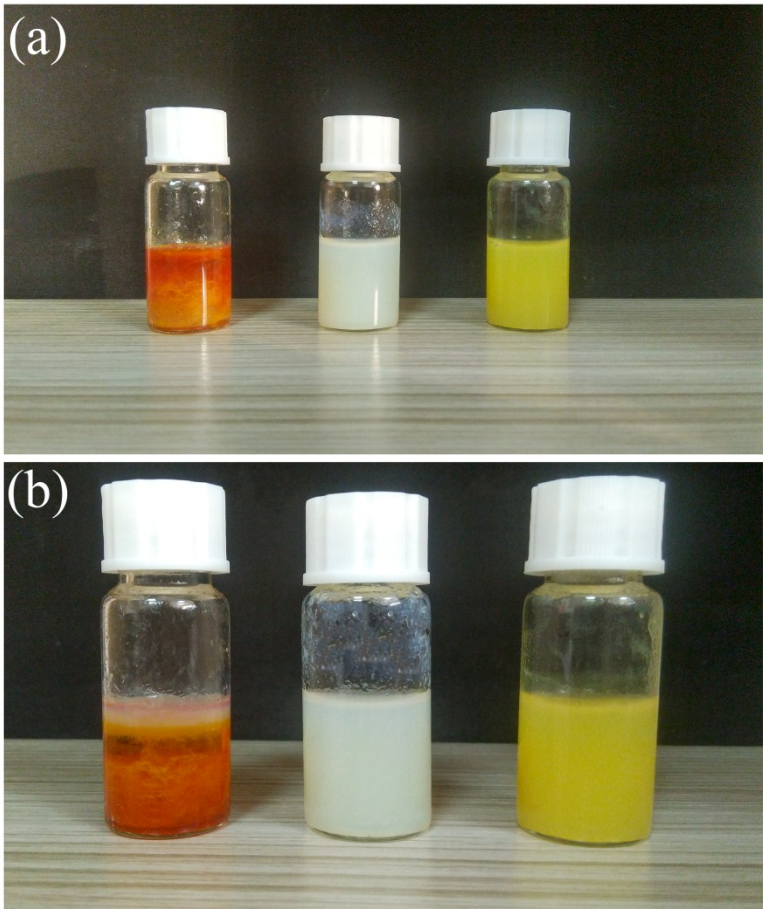

Fig. S2†. Dispersibility of Kevlar fibers (brown), Kevlar nanofibrils (white) and KNFs (yellow) before (a) and after 7days (b).

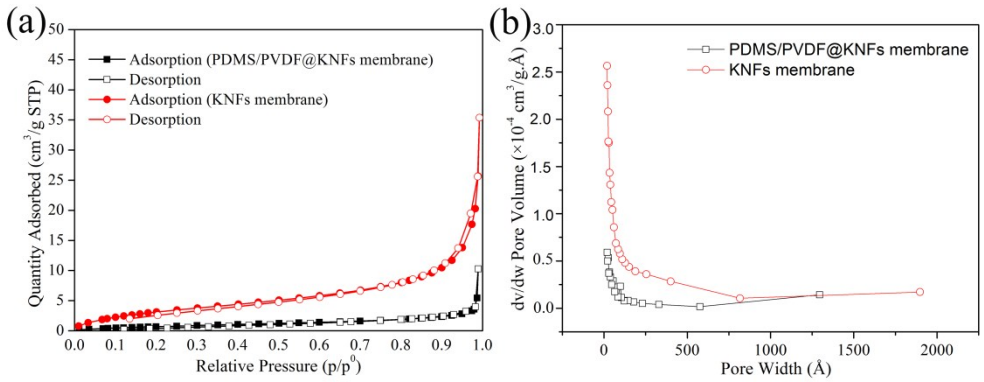

Fig. S3†. (a) N_2 sorption isotherm curve of PDMS/PVDF@KNFs membranes, (b) Barrett-Joyner-Halenda (BJH)-desorption dV/dw Pore Volume of the PDMS/PVDF@KNFs membranes, which performed on an ASAP 2020 surface analyzer (Micromeritics, USA) at 77.23 K.

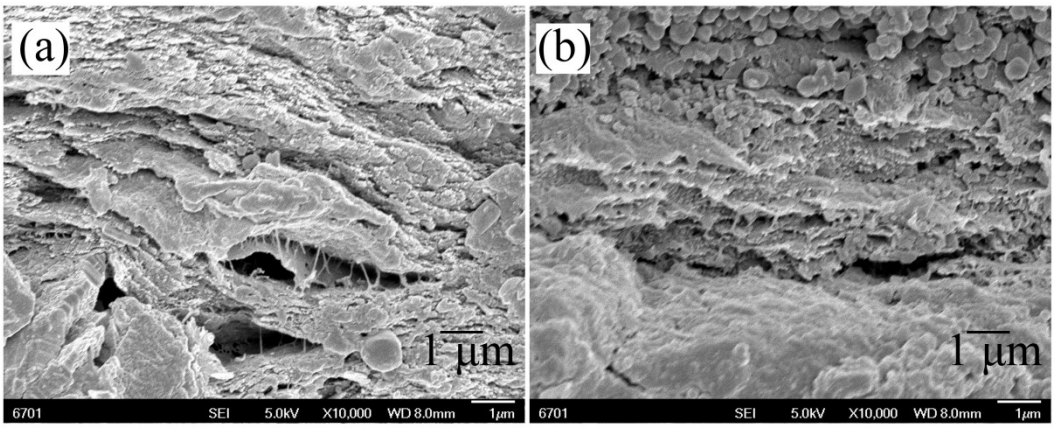

Fig. S4†.SEM images of cracked surfaces of KNFs (a) and PDMS/PVDF@KNFs membranes (b) after tensile testing.

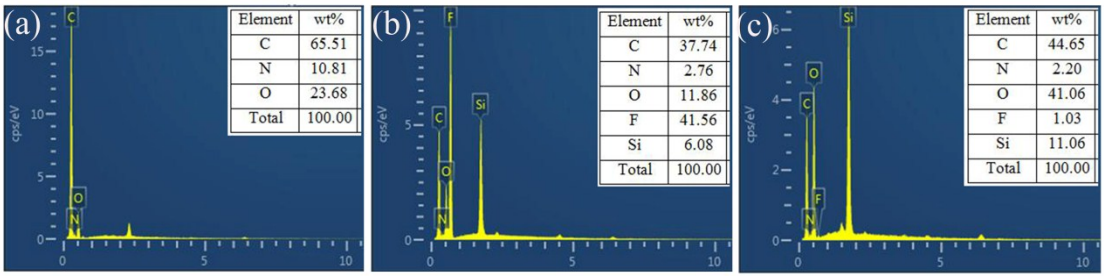

Fig. S5†. The energy dispersive X-ray (EDX) spectra of KNFs membrane (a), PDMS/PVDF@KNFs membrane before (b) and after burning (c).

Supplementary Movies

Movie S1†. Oils absorb of the PDMS/PVDF@KNFs membrane from oil water mixture (n-hexane and water).

Movie S2†. Oils absorb of the PDMS/PVDF@KNFs membrane from oil water mixture (dichloroethane and water).

Movie S3†. The oil-water separation of the PDMS/PVDF@KNFs membrane.

Movie S4†.The deformation processes of PDMS/PVDF@KNFs membrane by man-made bending destructions.

Movie S5†.The stress-strain processes of PDMS/PVDF@KNFs membrane by tensile test.

Movie S6†. Combustion behaviors of KNFs membrane.

Movie S7†. Flame resistance of PDMS/PVDF@KNFs membrane.