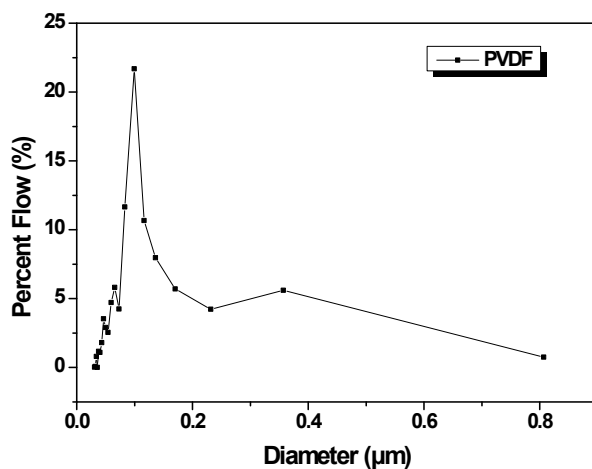
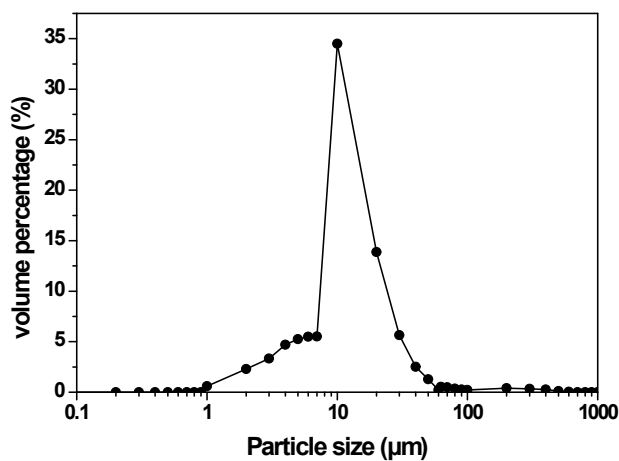


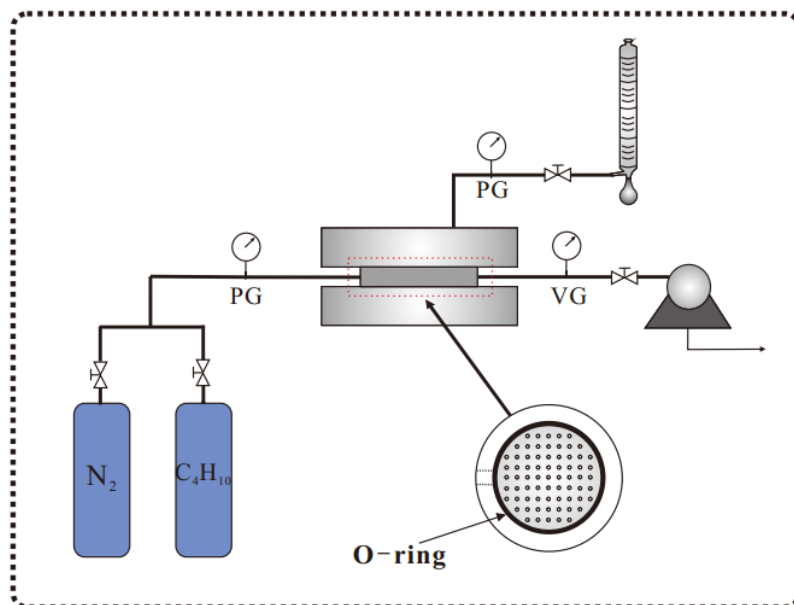
## Supporting Information



**Figure S1.** Pore size distribution of the PVDF ultrafiltration membrane.  
(The data was obtained from POROLUX 1000, IB-FT Germany)



**Figure S2.** Particle size distribution of p-KIT-6.  
(The data was obtained from the laser particle analyzer (Mastersizer 2000, Malvern, UK))



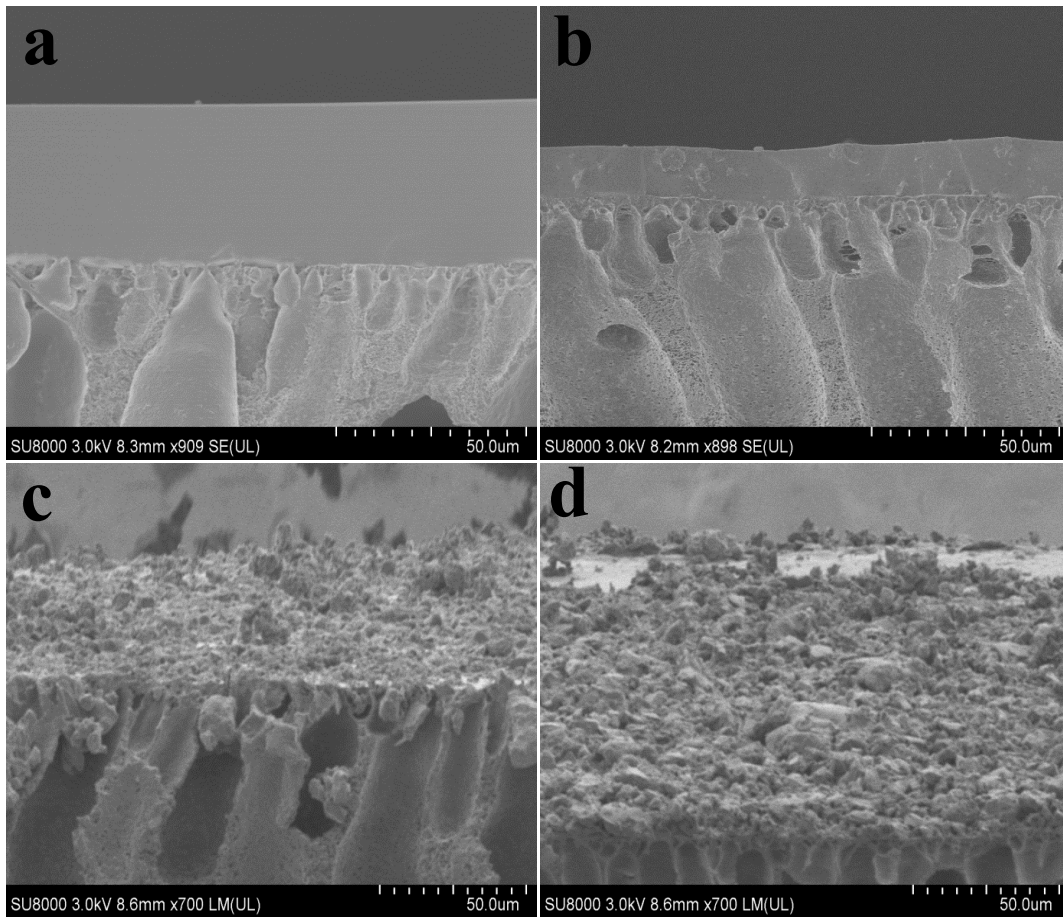
**Figure S3.** Schematic diagram of experimental setup for gas permeation.

**Table S1.** Properties of KIT-6 and p-KIT-6

Sample	$S_B$ ( $\text{m}^2 \text{g}^{-1}$ )	D (nm)	$V_{\text{tot}}$ ( $\text{cm}^3 \text{g}^{-1}$ )	$V_{\text{mic}}$ ( $\text{cm}^3 \text{g}^{-1}$ )	$S_{\text{mic}}$ ( $\text{m}^2 \text{g}^{-1}$ )	Bulk density ( $\text{g cm}^{-3}$ )
KIT-6	793	4.9	1.04	0.07	124	-
p-KIT-6	742	4.8	0.97	0.05	84	2.8852

**Table S2.** Onset degradations of MMMs at different p-KIT-6 loadings

KIT-6/PDMS (wt.%)	T(onset degradation) (°C)
0	258.58
2	304.53
10	303.23
25	271.3



**Figure S4.** Cross-sectional FESEM images of (a) pure membrane, (b) 2wt.% MMM, (c) 10wt.% MMM and (d) 25wt.% MMM.