Electronic Supplementary Material (ESI) for RSC Advances.

High performance polydimethylsiloxane pervaporation membranes with hyperbranched polysiloxane as cosslinker for separation of *n*-butanol from water

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1. PV experiments method

The PV experiments were carried out at various temperatures using a pervaporation cell with the effective membrane area of 35.24 cm^2. In pervaporation operation, the pressure of downstream side (permeate side) was maintained at 200 ± 10Pa. The permeated mass was collected in a condensation trap cooled by liquid nitrogen. The composition in feed mixture and the corresponding permeate was detected by gas chromatography (GC) SP-6800A (Shangdong, China) equipped with a packed column and a thermal conductivity detector (TCD).

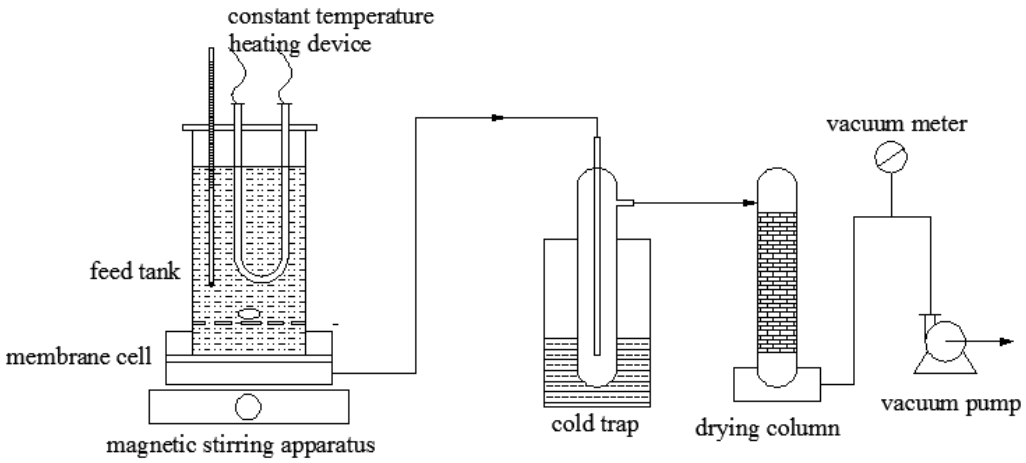

Fig.S1 Schematic diagram of the experimental equipment

2. Scanning electron microscope

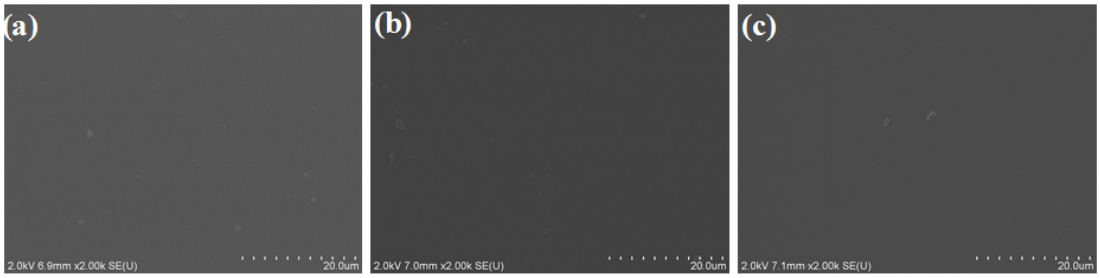

Fig.S2 Surface morphology of HPSiO-c-PDMS membranes: (a) HPSiO-c-PDMS-1, (b) HPSiO-c-PDMS-2, (c) HPSiO-c-PDMS-3

3. Contact angle measurements of HPSiO-c-PDMS membranes

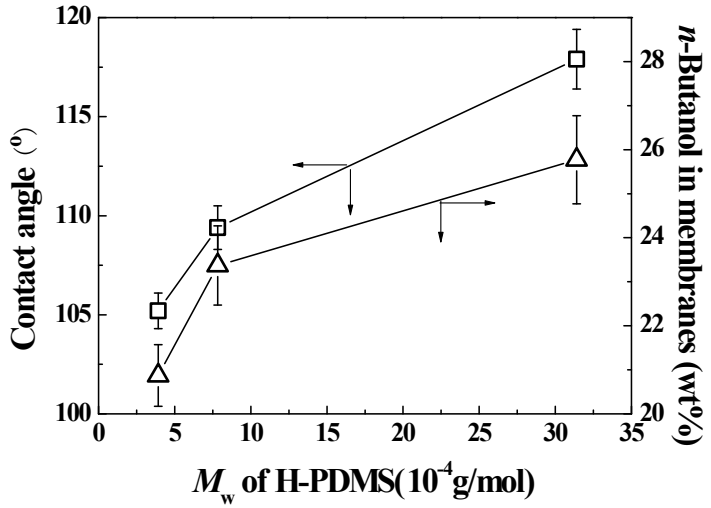

Fig.S3. Effect of H-PDMS molecular weight on *n*-butanol concentration in membranes and contact angle of HPSiO-c-PDMS membranes

4. GPC spectroscopy of PDMS

Table S1 Molecular weights amd PDI of H-PDMS and HPSiO

Samples	Molecular weight		PDI[c]
	M_w[a]	M_n[b]	
H-PDMS-1	39250	24369	1.61
H-PDMS-2	78263	49437	1.58
H-PDMS-3	314043	195815	1.60
HPSiO	3513	1417	2.48

[a] M_w, weight average molecular weight;

[b] M_n, number average molecular weight;

[c] Polydispersity index (PDI) =M_w/M_n