

## Electronic supporting information

### The Effect of Finely Controlled Nanocomposite Concentration and the Change of Nanochannel Size on Proton Conductivity of Nanocomposite Membranes

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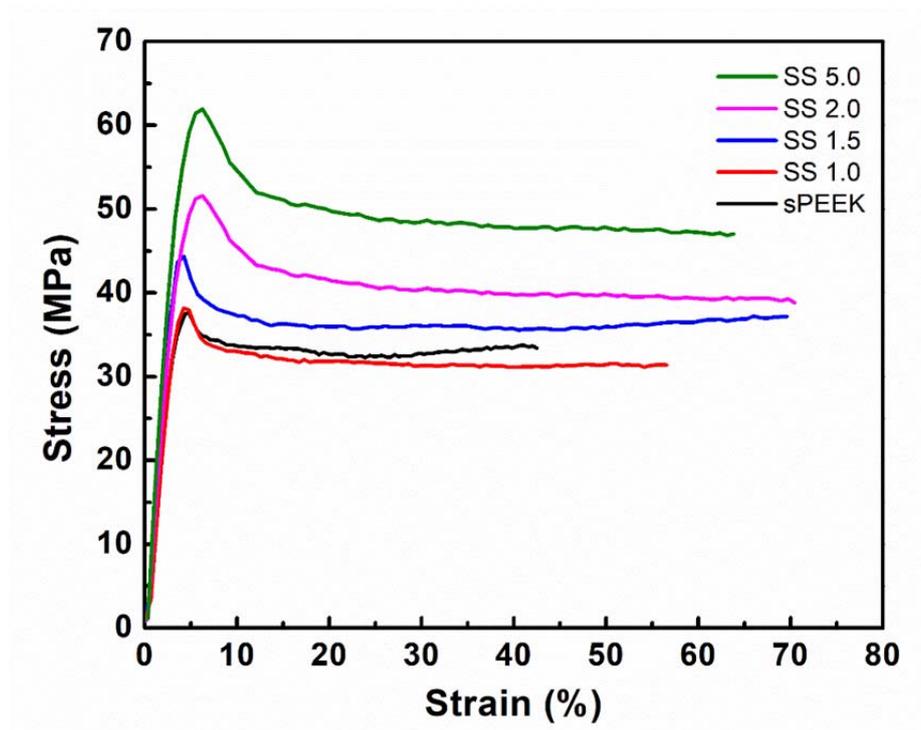
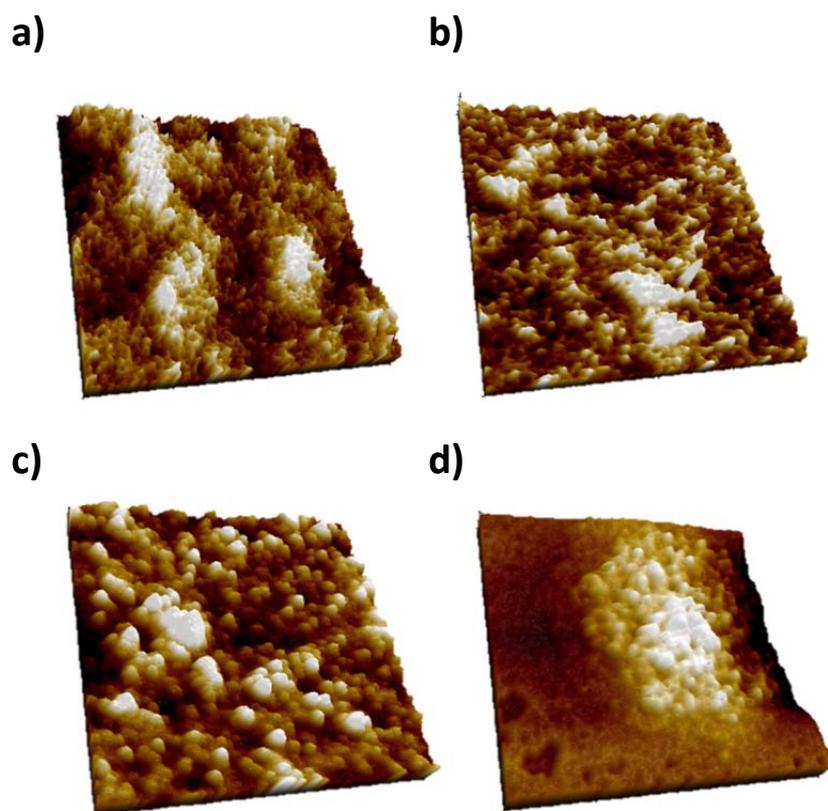


Figure S1. Tensile properties of sPEEK nanocomposite membranes.

Table S1. Tensile properties of nanocomposite membranes

	Young's modulus (MPa)	Yield (MPa)	Strain at break (%)	Stress at break (MPa)
sPEEK	1693.2	37.7	42.7	33.3
SS1.0	1700.3	38.0	56.4	31.6
SS1.5	1732.8	44.8	69.6	37.2
SS2.0	1855.8	51.6	70.8	39.1
SS5.0	2000.3	61.7	63.8	46.8



**Figure S2. AFM image of (a) sPEEK (1  $\mu\text{m}$  x 1  $\mu\text{m}$ ); (b) SS 1.5 (1  $\mu\text{m}$  x 1  $\mu\text{m}$ ); (c) SS 2.0 (1  $\mu\text{m}$  x 1  $\mu\text{m}$ ); (d) SS 5.0 (1  $\mu\text{m}$  x 1  $\mu\text{m}$ ).**