

## Supplementary information

### Pore size and concentration effect of mesoporous silica nanoparticles on coefficient of thermal expansion and optical transparency of poly(ether sulfone) film display

Nhat Tri Vo, Astam K. Patra and Dukjoon Kim\*

*School of Chemical Engineering, Sungkyunkwan University, Suwon, Gyeonggi, 16419 (Republic of Korea), E-mail: djkim@skku.edu*

**Table S1.** Tg and onset temperature of samples MSN-1/PES, MSN-2/PES, MSN-3/PES before annealing

Silica Nanoparticle	Content of MSN in PES (wt %)	Onset T (°C)	Tg (°C)
None	0	212.36	216.42
MSN-1	0.1	210.84	214.41
	0.5	207.93	212.62
	1.0	207.24	211.02
MSN-2	0.1	209.60	213.34
	0.5	206.41	211.74
	1.0	205.36	209.93
MSN-3	0.1	205.87	210.72
	0.5	204.37	209.89
	1.0	200.41	205.83

**Table S2.** Tg and onset temperature of samples MSN-1/PES, MSN-2/PES, MSN-3/PES after annealing.

Silica Nanoparticle	Content of MSN in PES (wt %)	Onset T (°C)	Tg (°C)
None	0	212.64	216.96
MSN-1	0.1	216.62	220.64
	0.5	217.39	221.03
	1.0	219.58	223.11
MSN-2	0.1	216.84	220.39
	0.5	221.35	224.05
	1.0	222.77	226.03
MSN-3	0.1	218.95	222.69
	0.5	221.94	225.41
	1.0	224.44	227.26

**Table S3.** Variation of CTE of MSN-PES nanocomposite films after annealing

<b>Silica nanoparticle</b>	<b>Content of MSN in PES (wt%)</b>	<b>CTE (30-90 °C) (ppm/°C)</b>	<b>CTE (30-150 °C) (ppm/°C)</b>
None	0	65	74
MSN-1	0.5	48	57
	1.0	47	56
MSN-2	0.5	43	49
	1.0	42	46
MSN-3	0.5	38	43
	1.0	36	40