Electronic Supplementary Material (ESI) for Nanoscale.

-Supporting Information-

Fractionation of block copolymers for pore size control and reduced dispersity in mesoporous inorganic thin films

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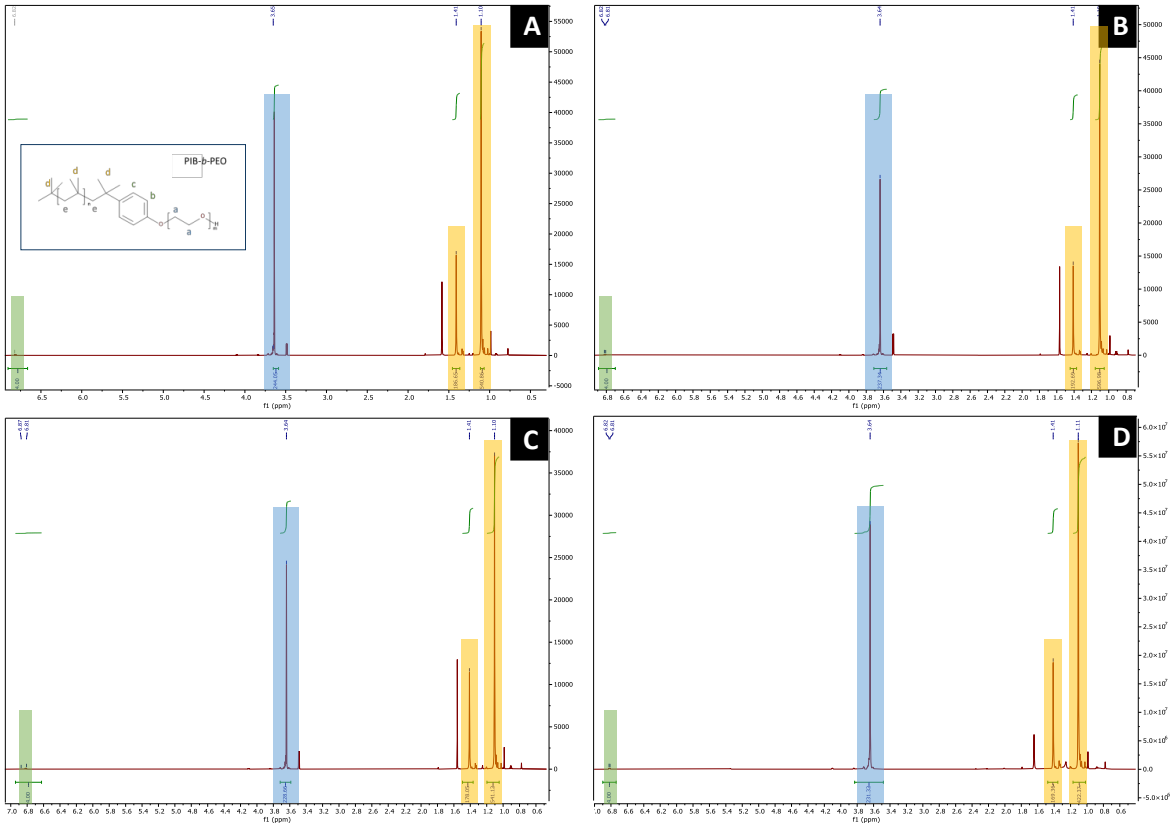

Figure S1. ^{1}H NMR spectra of the non-fractionated BCP (A) and the different fractions collected during this study: A17 (B); A18(C) and A19 (D). Note that all ^{1}H NMR spectra show the characteristic peaks of the PIB (1.1 and 1.4 ppm) and PEO (3.6 ppm) protons, see corresponding proton assignation in the inset.

Sample	Block	Degree of polymerization (N)	M_w (kg/mol)
BCP	PIB	92.1	5.0
	PEO	61.8	2.7
A17	PIB	98.7	5.5
	PEO	59.3	2.6
A18	PIB	89.8	5.0
	PEO	57.2	2.5
A19	PIB	74.2	4.2
	PEO	57.8	2.5

Table S1. Molecular weight (M_w) and degree of polymerization (N) of each block, as calculated by the signals at 3.6 ppm (4H, PEO) and 1.1 and 1.4 ppm (8H, PIB), and taking the signal of the phenol linking group (6.8 ppm) as a reference.

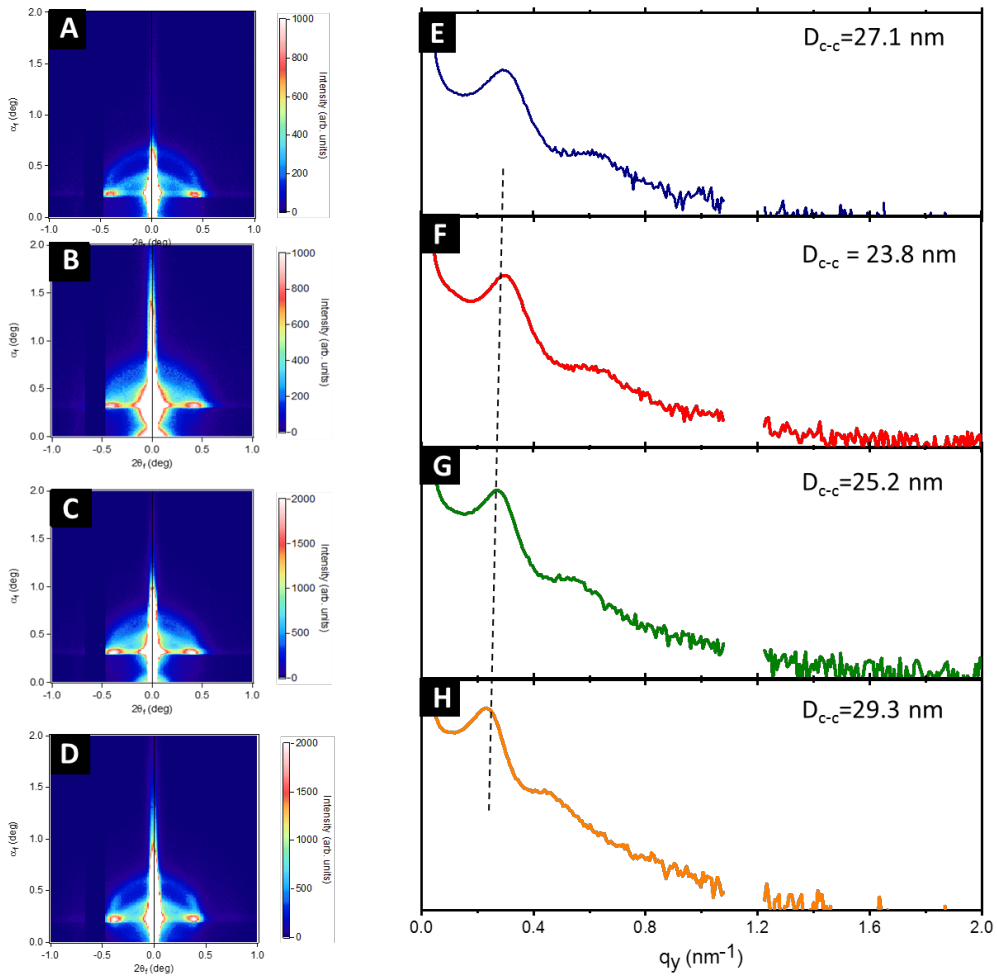

Figure S2. 2D GISAXS scattering patterns (left) and in-plane GISAXS line cuts (right) for the non-fractionated BCP (A,E) and the three different fractions collected during the fractionation process A19 (B,F); A18 (C,G) and A17 (D,H). The corresponding D_{c-c} is indicated for each sample.

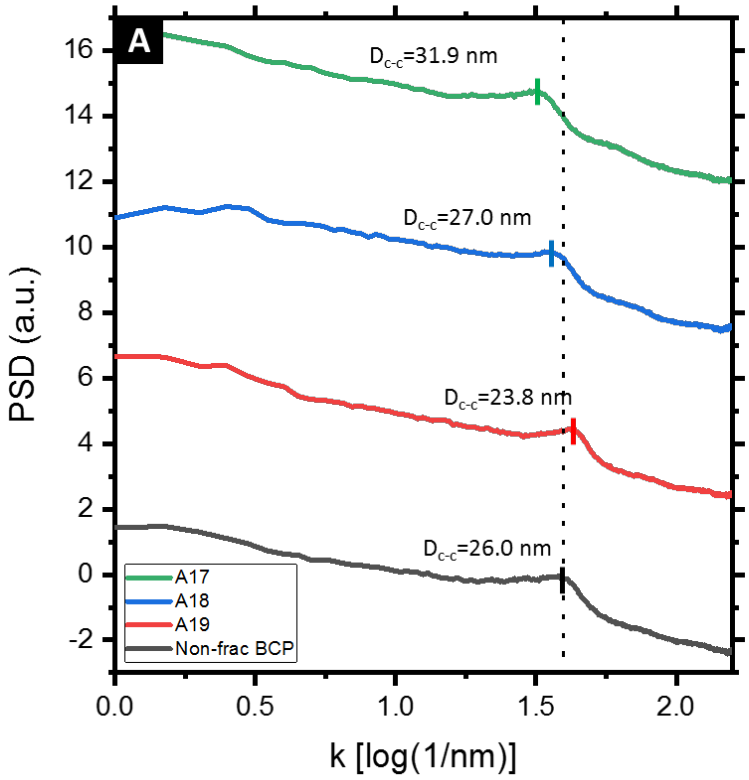

Figure S3. A) Power spectral density function calculated as the square of the absolute intensity value of the FFT for the calcined mesoporous aluminosilicate films

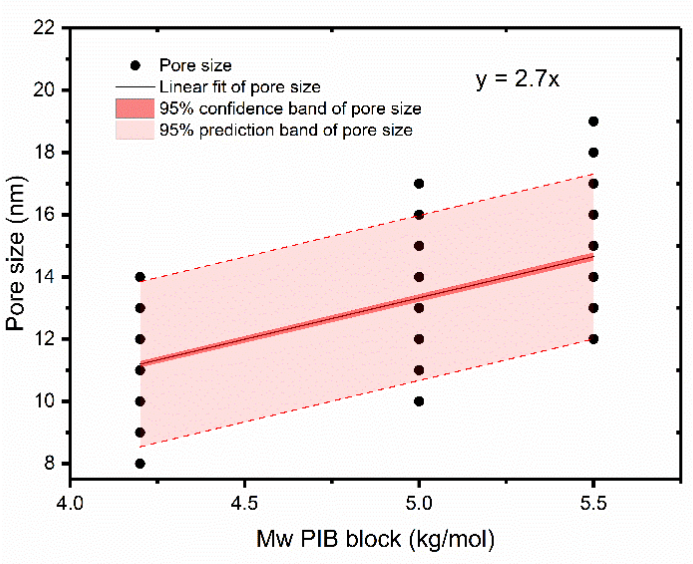

Figure S4. Scatter plot and linear regression of the pore size obtained for the different molecular weight of the PIB block.

	Non-fractionated	A17	A18	A19
M_w Đ	1.25	1.10	1.12	1.11
M_w E_n	1.08	0.73	0.51	0.75
$D_{i\text{-}p}$ Đ (AFM)	1.08	1.01	1.01	1.02
$D_{i\text{-}p}$ E_n (AFM)	0.62	0.47	0.45	0.39
$D_{i\text{-}p}$ Đ (EP)	1.20	1.03	1.02	1.02
$D_{i\text{-}p}$ E_n (EP)	2.06	1.42	1.39	1.70

Table S2. Dispersity (*Đ*) and normalized entropy (E_n) values calculated for the molecular weight (M_w) and pore size distributions ($D_{i\text{-}p}$) obtained from GPC, AFM and EP respectively.

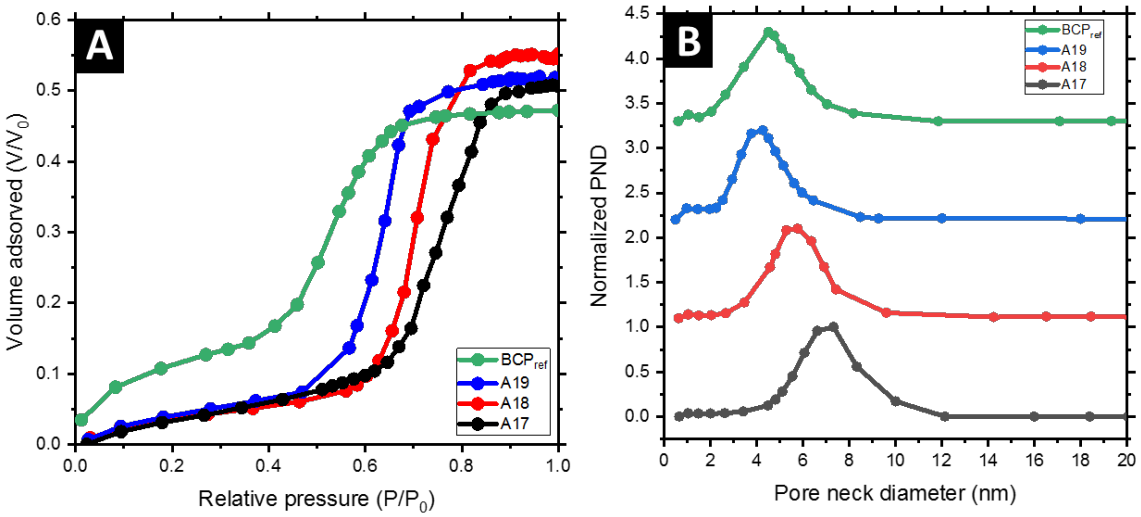

Figure S5. A) EP desorption isotherms for the reference BCP and the different fractions collected during the process. B) Pore neck diameter distributions of the porous films created using the pristine BCP and the three different collected fractions.

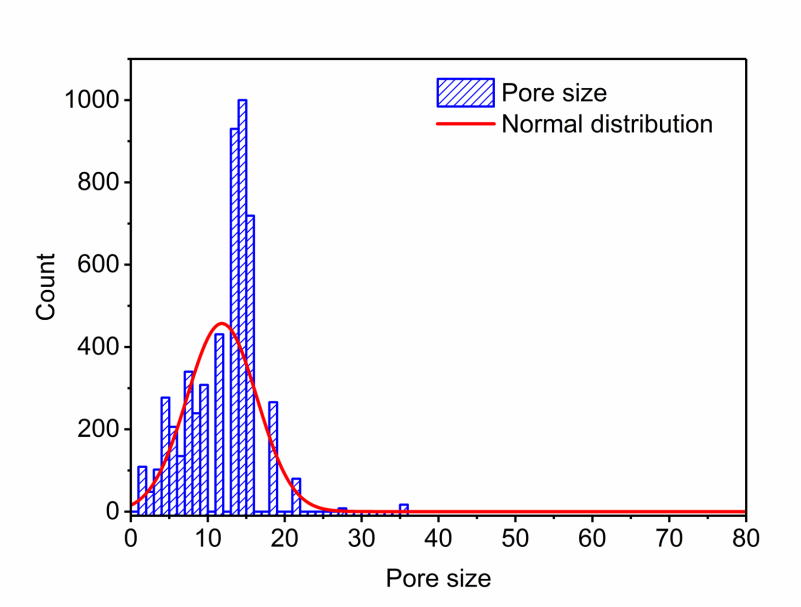

Figure S6. Normal fit of the pore size distribution curve obtained from EP measurements of A17 sample.