Supporting Information for

Rapid Synthesis of Nanoporous Conformal Coatings via Plasma-Enhanced Sequential Infiltration of a Polymer Template.

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Figure S3: GISAXS data linecut for 1 PE SIS deposited aluminum oxide in non-swelled PS-b-p4VP polymer.

Supplementary Note 1: GISAXS data analysis.

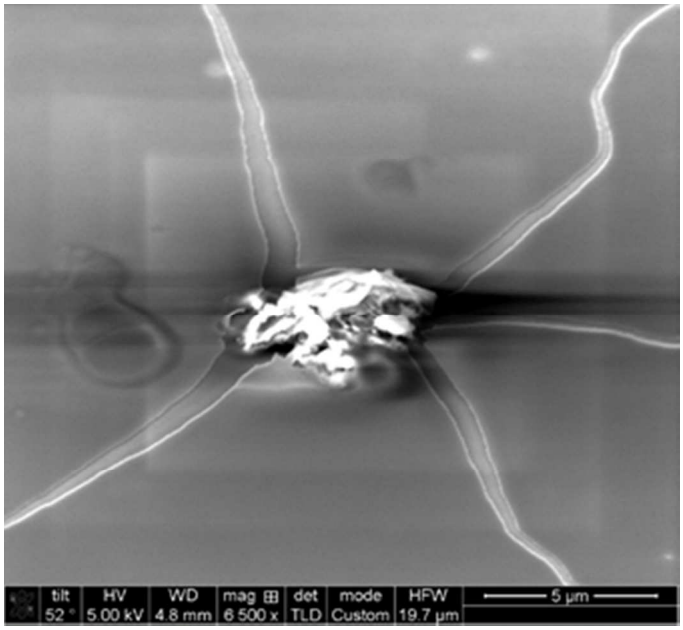

Figure S1. Rupture of aluminum oxide films during oxygen plasma assisted (20 minutes) polymer removal. The figure demonstrates damage to the coating made of aluminum oxide-infiltrated PS-b-P4VP polymer.

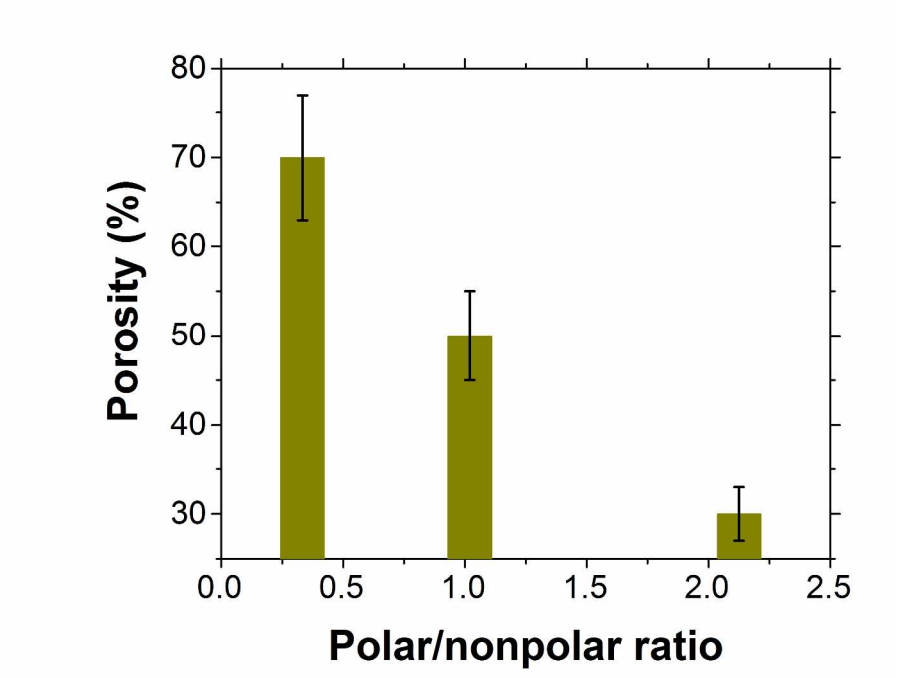

Figure S2. Dependence of the porosity of synthesized metal oxide films on the polar/nonpolar domain concentration ratio in the swelled PS-b-P4VP polymer.

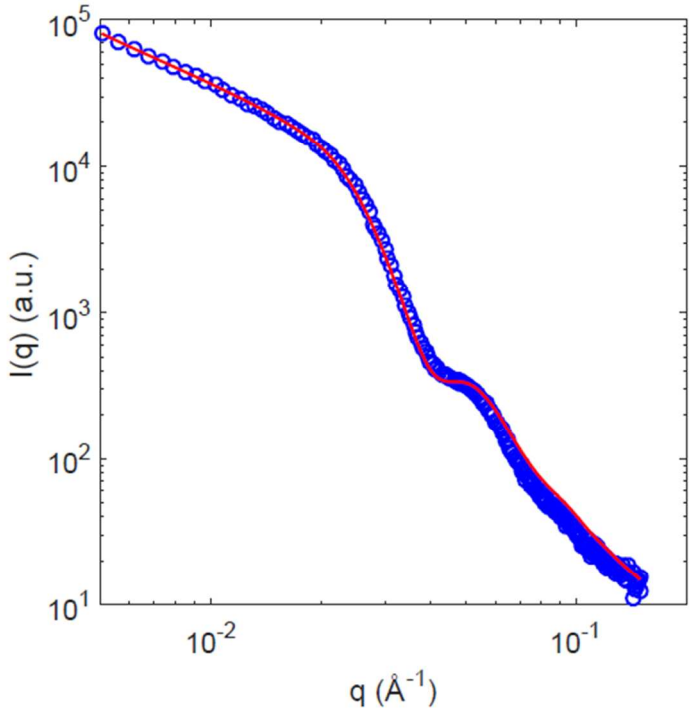

Figure S3. GISAXS data linecut for 1 PE SIS deposited aluminum oxide in non-swelled PS-b-p4VP polymer.

Supplementary Note 1: GISAXS data analysis.

Horizontal cut of GISAXS data can be fit with a vertically oriented cylinder model.

$$F(q_{xy}, R) = 2\pi R^2 \frac{J_0(q_{xy}R)}{q_{xy}R}$$

$$I(q_{xy}) = S(q_{xy}) \int n(r; r_0, \sigma) \left|F(q_{xy}, r)\right|^2 dr + Bg$$

$$S(q_{xy}) = S_0(q_{xy}; D, v) + kq^{-n}$$

$S(q_{xy}; D, v)$ is the structure factor in the in-plane, which is composed of S_0 and a power-law type of scattering with an exponent n. The latter is to describe possible clustering of cylinders. For the former, we used the hard sphere structure factor that is described by two parameters, D and v, which are a hydrodynamic radius and volume fraction. The hydrodynamic radius is about the half of the inter-cylinder distance. $n(r)$ is the Schultz size distribution function, which also has two parameters, mean radius r_0 and variance σ. J_0 is the Bessel function of the first kind of order 0. Bg stands for background scattering.

We obtained r_0=9.2 nm, σ=17.4%, D=12.86 nm, v=0.158 and n=0.83.