Electronic Supplementary information

Nano-Porous Structures via Self-Assembly of Amphiphilic Triblock Copolymer: Influence of solvent and molecular weight

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Atomic Force Microscopy (AFM)

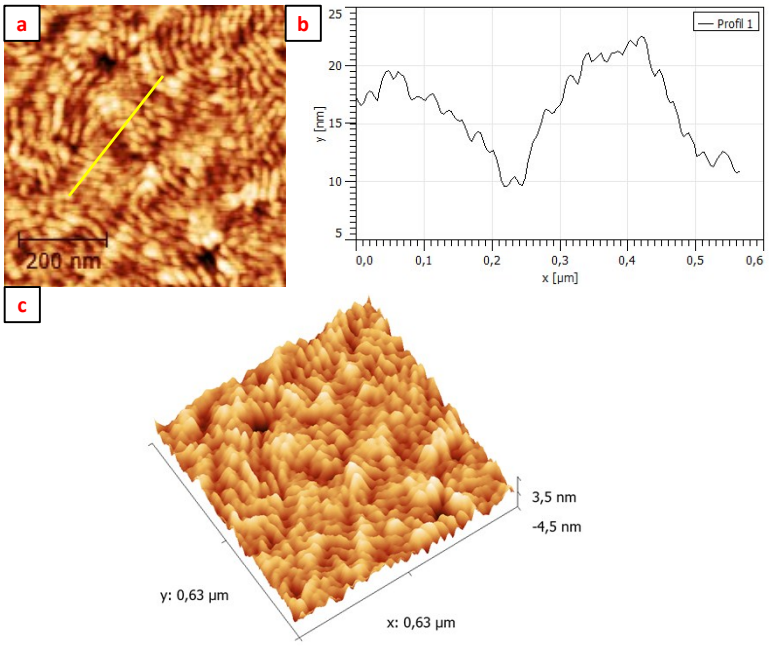

Figure S 1 (a) AFM topography image of PS_{5K}-$PNaSS_{5K}$-PS_{5K} (5.88 wt.% water content) (b) Cross-sectional profile of the topography along the line shown in (a). (c) 3D view of the AFM topography image of the same sample.

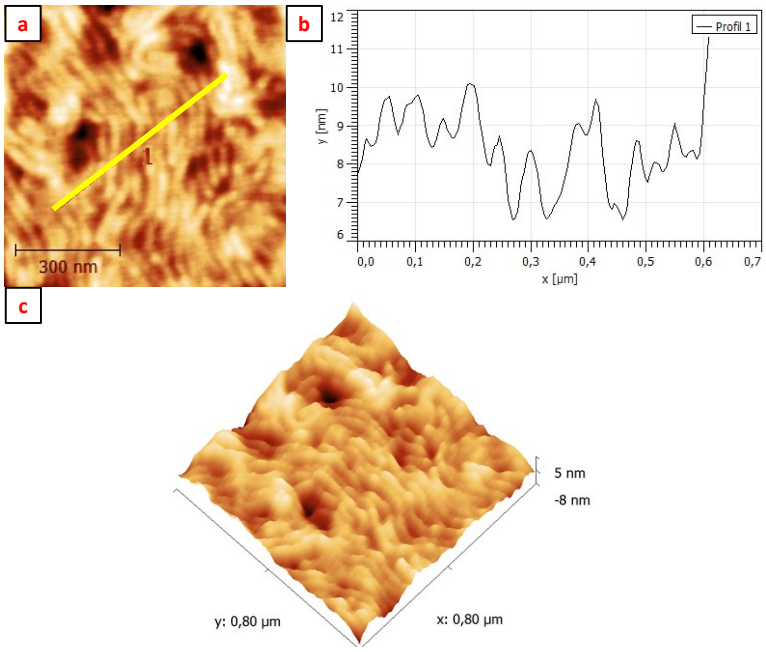

Figure S 2 (a) AFM topography image of PS_{5K}-$PNaSS_{20K}$-PS_{5K} (5.88 wt.% water content) (b) Cross-sectional profile of the topography along the line shown in (a). (c) 3D view of the AFM topography image of the same sample.

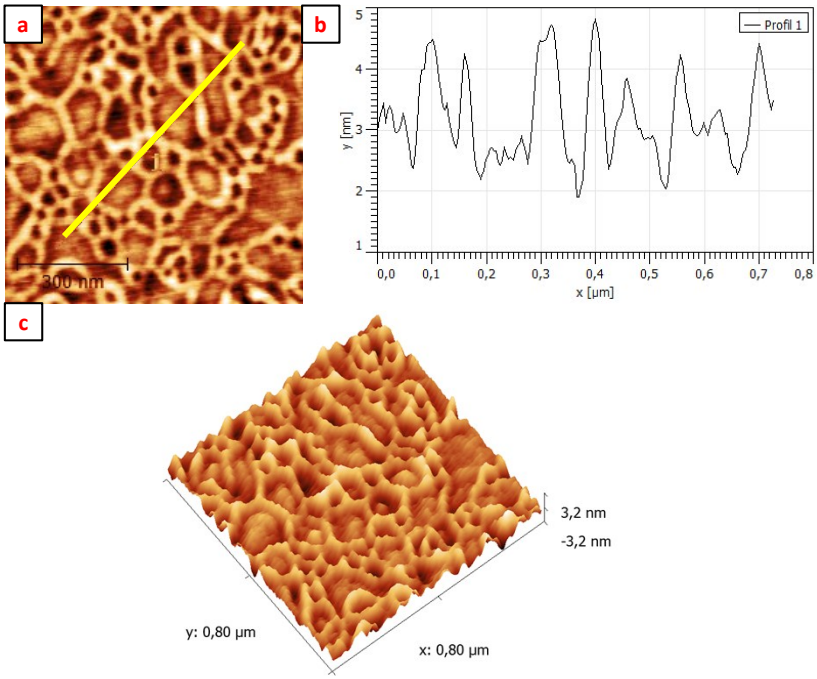

Figure S 3(a) AFM topography image of PS_{10K}-$PNaSS_{10K}$-PS_{10K} (5.88 wt. % water content) (b) Cross-sectional profile of the topography along the line shown in (a). (c) 3D view of the AFM topography image of the same sample.

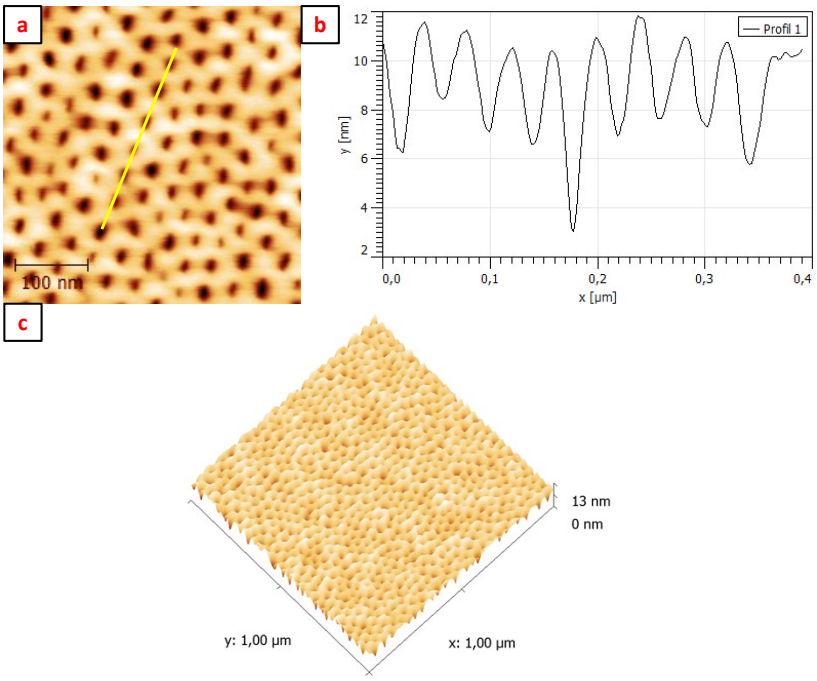

Figure S 4(a) AFM topography image of PS_{10K}-$PNaSS_{6K}$-PS_{10K} (3.00 wt.% water content) (b) Cross-sectional profile of the topography along the line shown in (a). (c) 3D view of the AFM topography image of the same sample.

Fast Fourier Transform (FFT)

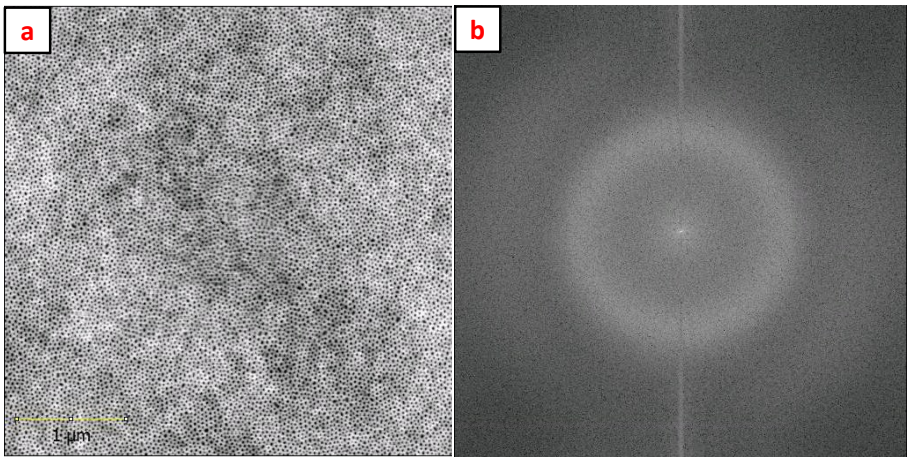

Figure S 5 (a) Topography AFM image of PS_{10K}-$PNaSS_{6K}$-PS_{10K} (3.00 wt. % water content) after spin coating (b) FFT of image (a).

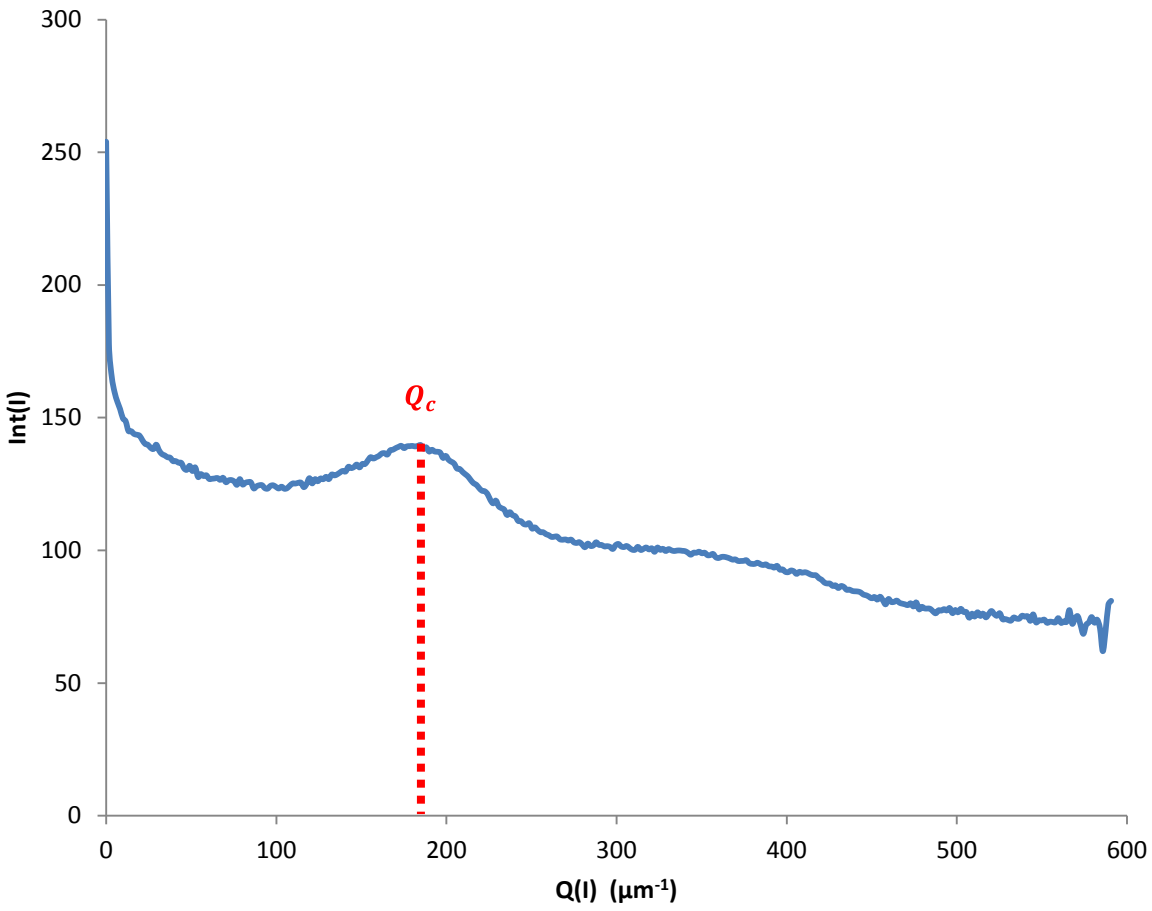

Figure S 6 Mathematic treatment of FFT, obtained by circular mean, of the topography image of **Figure S 5**.

$$Q_c = 173\ \mu m^{-1}$$

The characteristic length $\boldsymbol{L_c}$ was calculated according **Equation S 1**:

$$L_c = \frac{2\pi}{Q_c} = 36\ nm \qquad \textbf{(Equation S 1)}$$

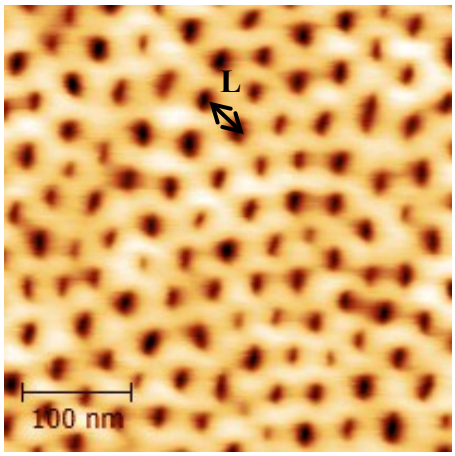

Figure S 7 AFM topography image. L_c represents the distance between center to center of two holes.

Cryo-TEM

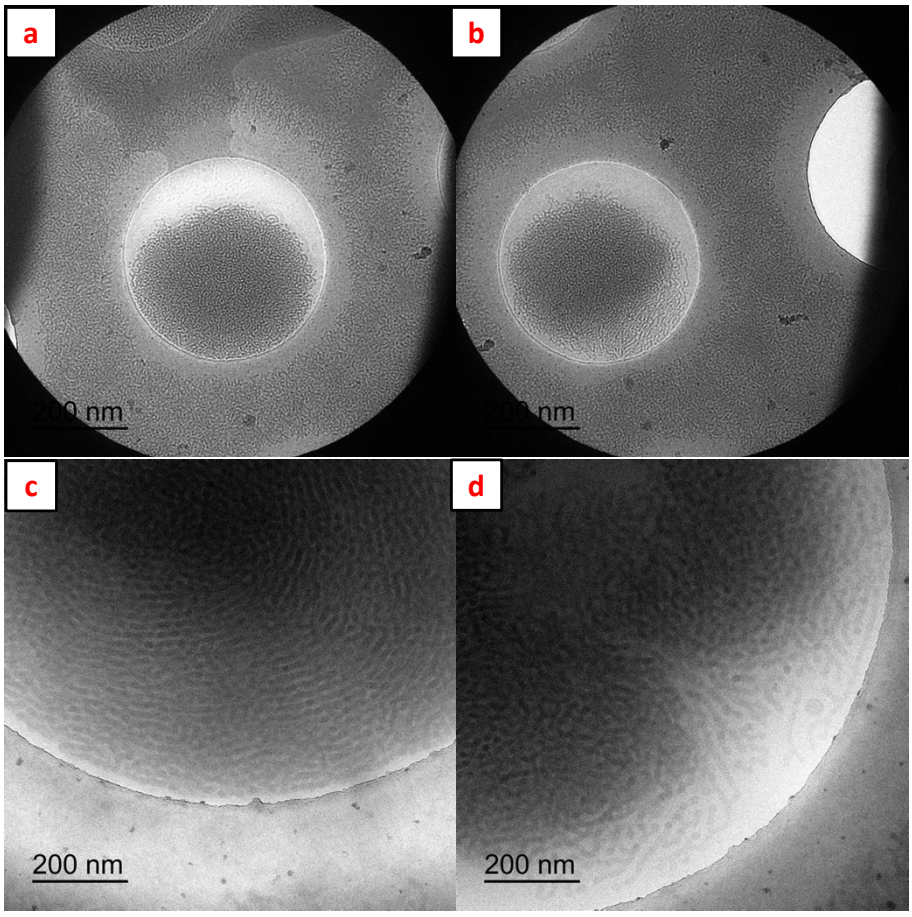

Figure S 8 Cryo-TEM images of PS_{10K}-$PNaSS_{10K}$-PS_{10K} in solution (5.88 wt. % water content). Images of worm-like micelles. (a-b) general view of the grid (c-d) zoomed of images (a) and (b) respectively.

SEM supplementary information

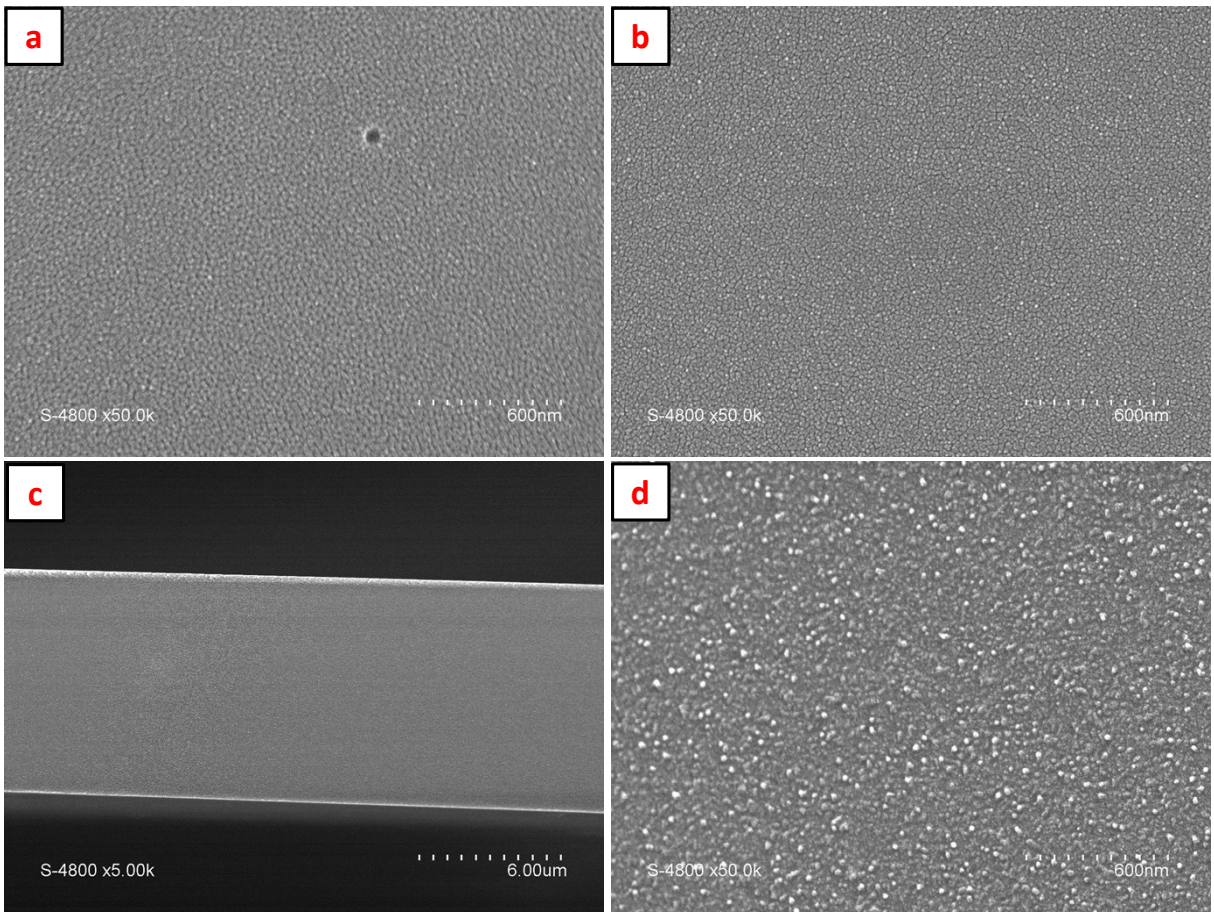

Figure S 9 SEM images of drop casted film from PS_{10K}-$PNaSS_{6K}$-PS_{10K} (3.0 wt. % water content) (a) Top surface (b) Bottom surface (c) Cross section of 9 µm thickness (d) Zoom of the cross section of (c).

Porosity and pore size of PS_{10K}-$PNaSS_{6K}$-PS_{10K} films

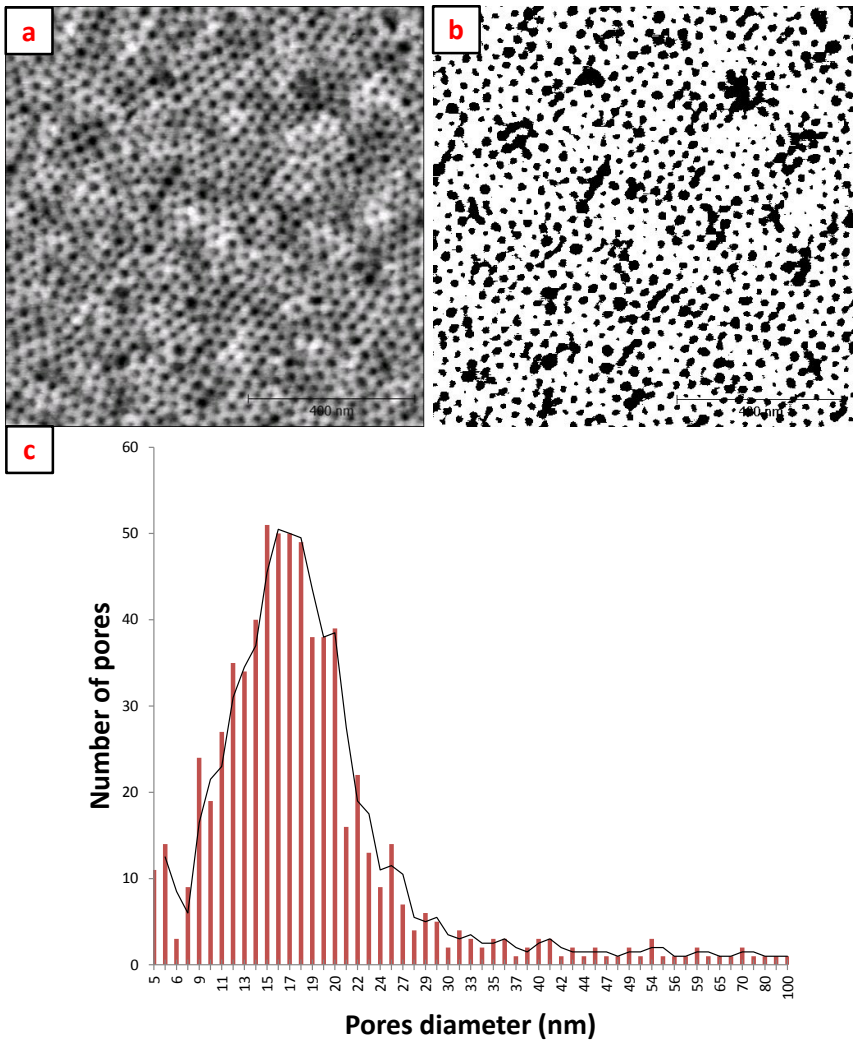

Figure S 10 (a) SEM image of PS_{10K}-$PNaSS_{6K}$-PS_{10K} after drying using spin coating and detachment from the wafer by immersion in water (b) binarized image (a) using ImageJ software (c) Numbers of pores versus pores diameters obtained from data treatment on image (b) using ImageJ software.

Porosity calculated according to **Equation S 2**:

$$\phi = \frac{Area_{pores}}{Area_{Total\ surface}} \times 100 \qquad \text{(Equation S 2)}$$

$$\phi = \frac{\sum_{11}^{89} N_{ipore} \times Area_{ipore}}{Area_{Totale}} \times 100 \quad \text{(Equation S 2)}$$

$$\phi = 0{,}2413 \times 100$$

Film top surface porosity is 24.13 %

The pores size is between 15 and 20 nm.

Filtration test

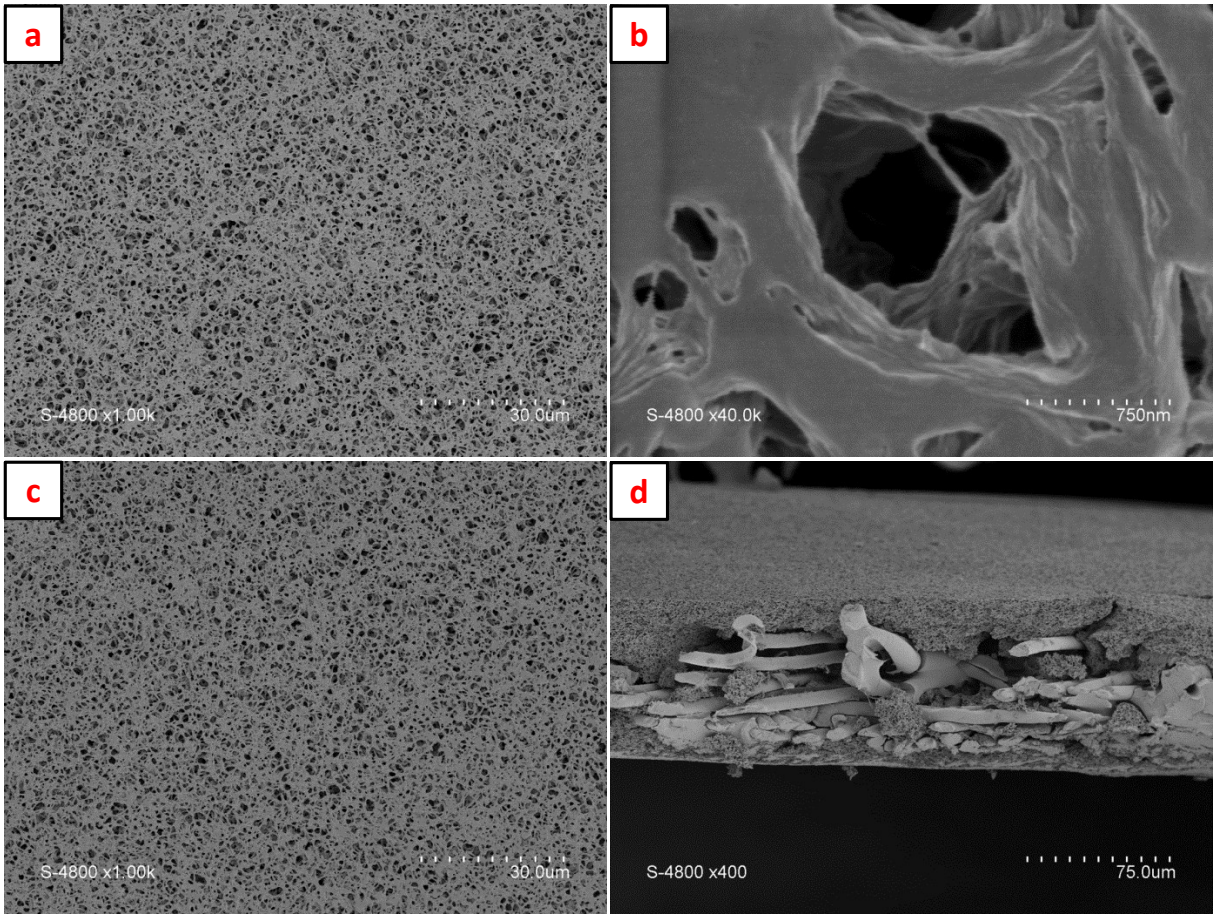

Figure S 11 SEM images of the virgin commercial Nylon membrane used as support (a) Top surface (b) Top surface zoomed (c) Bottom surface (d) Cross section.

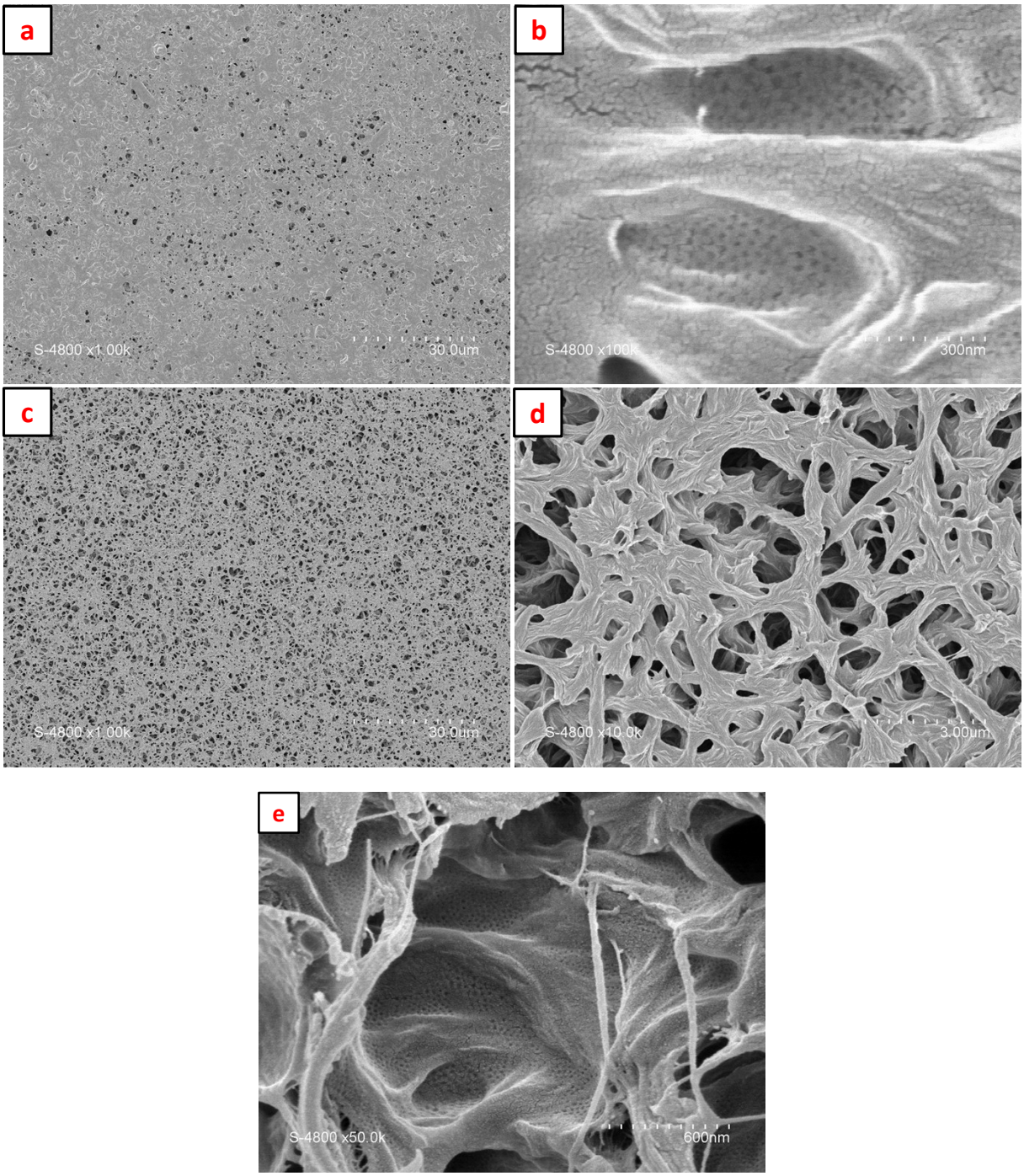

Figure S 12 SEM images of the coated commercial Nylon membrane with PS_{10K}-$PNaSS_{6K}$-PS_{10K} with 3.00 wt. % water content (a) Top surface (b) Zoom of the pores on the top surface (c) Bottom surface (d) Zoom of the pores on the bottom surface (e) Cross section of the membrane.