

Electronic supplementary information for:

Hydrothermally stable molecular separation membranes from organically linked silica

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Small Angle X-ray Scattering patterns of sols I, II and III are displayed in figure S1. Log-log fits were made of similar parts of the pattern to obtain the fractal dimension. For a well-developed sol (III), the fractal dimension of the colloids persists towards smaller q . This indicates that the fractal structure can be observed over a somewhat larger range, which corresponds well with the bigger size of the sol colloids.

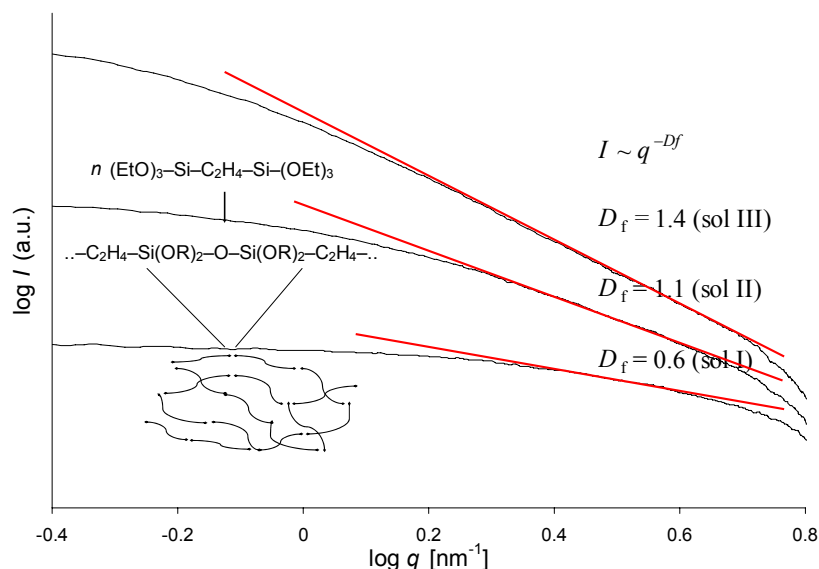


Figure S1. Small Angle X-ray Scattering patterns of sols I, II and III and illustration of the sol structure. The patterns have been fitted with an exponential relation to obtain the fractal dimension.

The absence of a structure with pores larger than the diameter of nitrogen can be observed from the adsorption isotherm. Figure S2 shows the N₂ adsorption isotherm of a thermally consolidated unsupported film prepared from sol II. As the blank measurement of only the measurement tube exhibits a similar p/V relation as the measurement tube including the sample, net adsorption by the sample is negligible. Within the experimental error, the surface area from this isotherm equals zero.

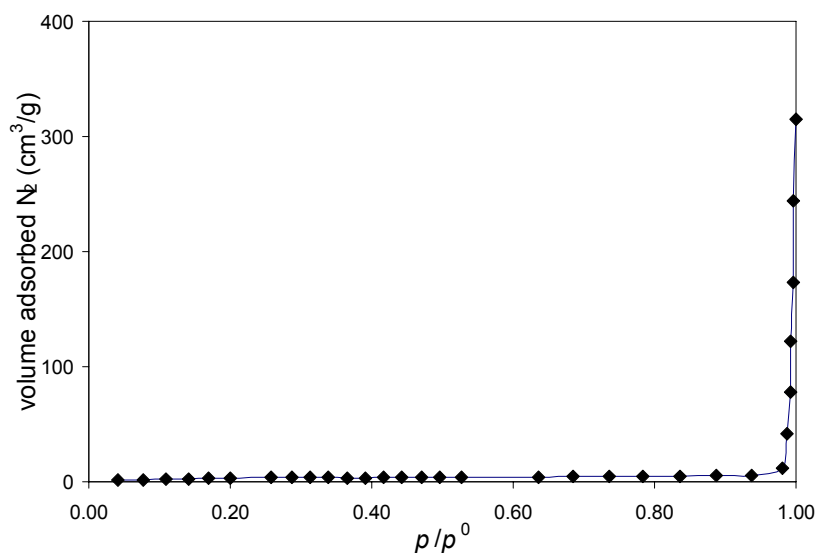


Figure S2. Nitrogen adsorption isotherm determined at 77 K for a thermally consolidated unsupported film prepared from sol II. The N₂ volume (at standard T/p) is plotted against the relative N₂ pressure at 77 K.