SUPLEMENTARY INFORMATION

The peculiar behavior of molecular dynamics of glass-forming liquid confined in the native porous materials - The role of negative pressure

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1. Materials

The nanoporous silica membranes used as confining matrix in this study were prepared by electrochemical etching of silicon wafers and subsequent oxidation. The pore size distribution for the nanoporous silica membranes were obtained by nuclear magnetic resonance (NMR) cryoporometry, see Fig. 1 attached below. This was also confirmed by other techniques such as Nitrogen gas adsorption and positron annihilation lifetime spectroscopy.

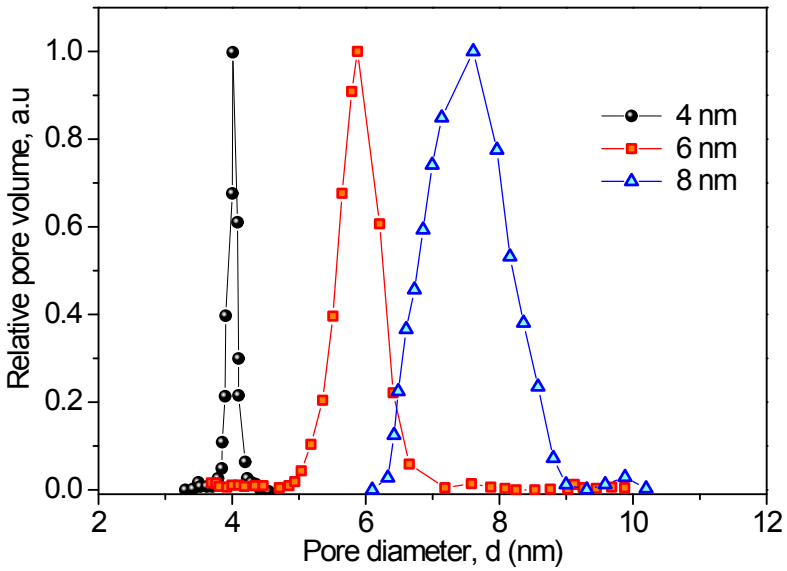

Fig. 1 Pore size distribution obtained from NMR-cryoporometry for the silica mambranes used in or studies.

2. Sample preparation

Samples were infiltrated into the silica pores in a home- built vacuum chamber. First, the empty porous membranes were annealed at 300ºC for 24 hrs in high vacuum (10-6 mbar) to remove water and other volatile impurities. After decreasing the temperature to 25ºC, the liquid sample was injected directly into the vacuum where the pores were filled by capillary wetting for the next 48 hrs. This ensured that all the pores were completely filled, a fact that was proved also by Positron annihilation lifetime spectroscopy. The samples were then removed from the vacuum and cleaned thoroughly with special tissue papers to remove excess material on the surface of the membranes. A very thin aluminum foil (0.8 microns) was then placed on both sides of the membrane to improve the electrical contacts and then sandwiched between platinum electrodes. For this case the electrode polarization is negligible.