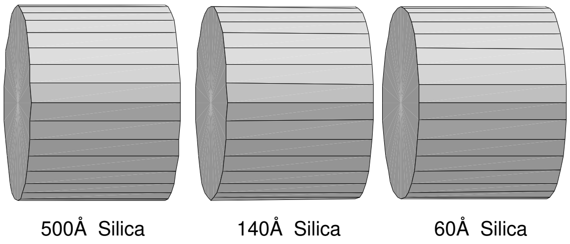
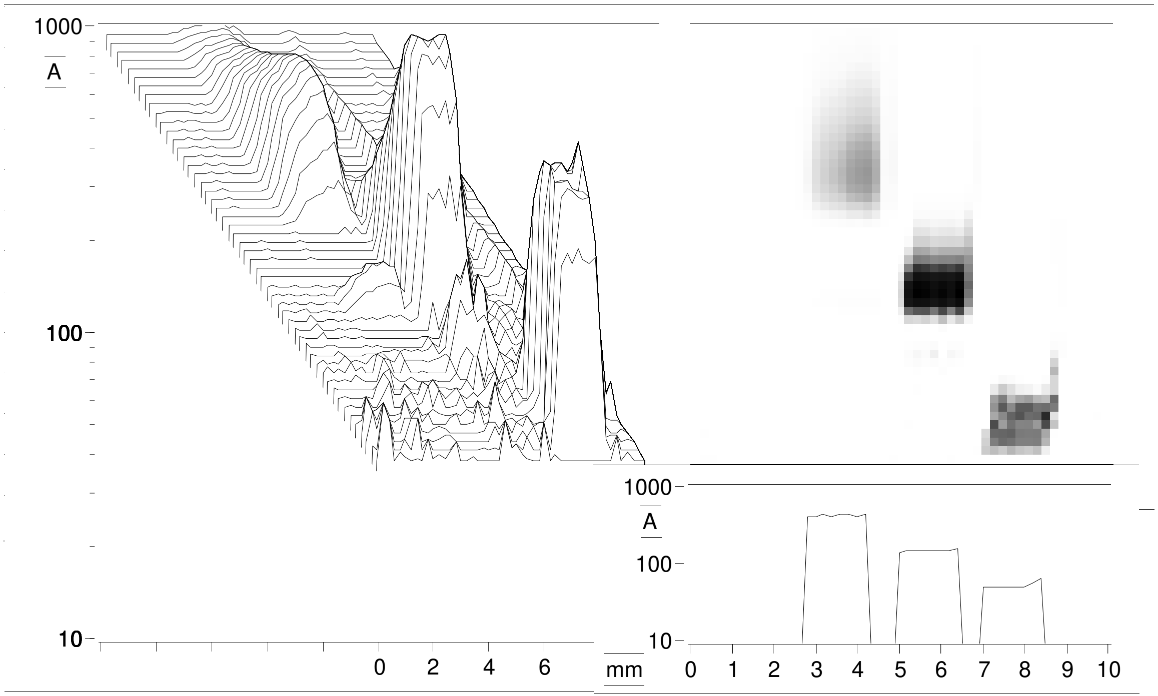



*(a:) 1D porous silica phantom with axial structure in the y direction.*



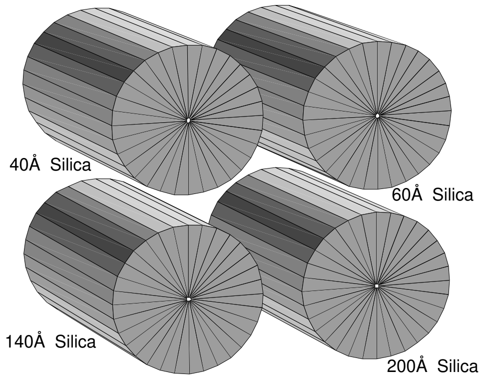

*(b:) 1D resolved porosity.*

Figure 1: 1D Cryoporometry.

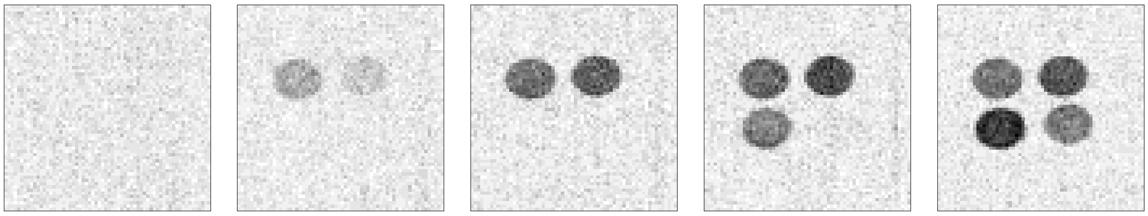
(a) Test sample constructed from layers of 60Å, 140Å and 500Å nominal pore size silica.

(b) Measured porosity resolved as a function of axial position (0 $\rightarrow$ 10 mm) and logarithmic pore diameter (40 $\rightarrow$ 1000Å). The data is plotted both as a surface plot and as an intensity map.

The lower right graph is a plot of the median pore size as a function of axial position.

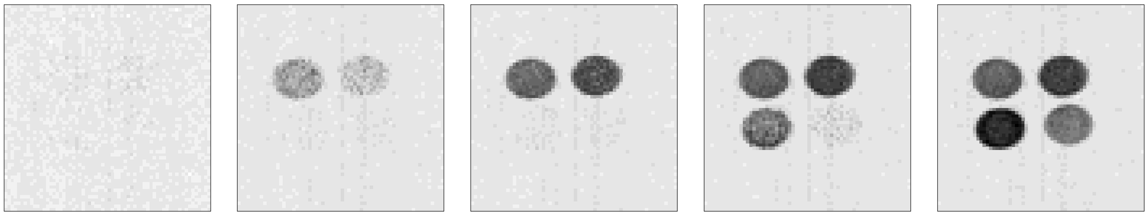



*(a:) 2D silica phantom with axial uniformity in the z direction.*



*Map 2: -135° C* *Map 9: -38° C* *Map 12: -22° C* *Map 16: -6° C* *Map 20: 5° C*

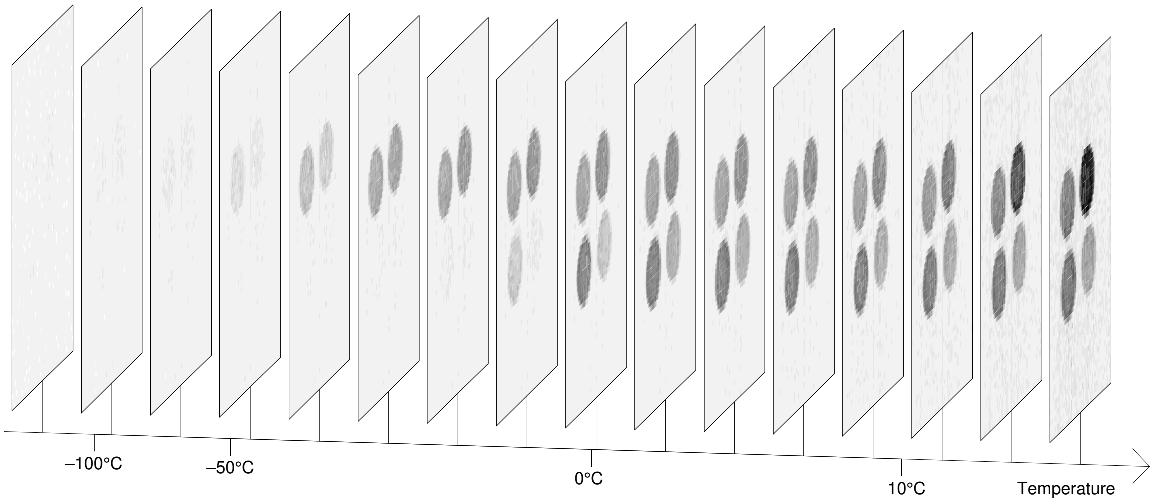
*(b:) Selected intensity maps from the temperature run.*



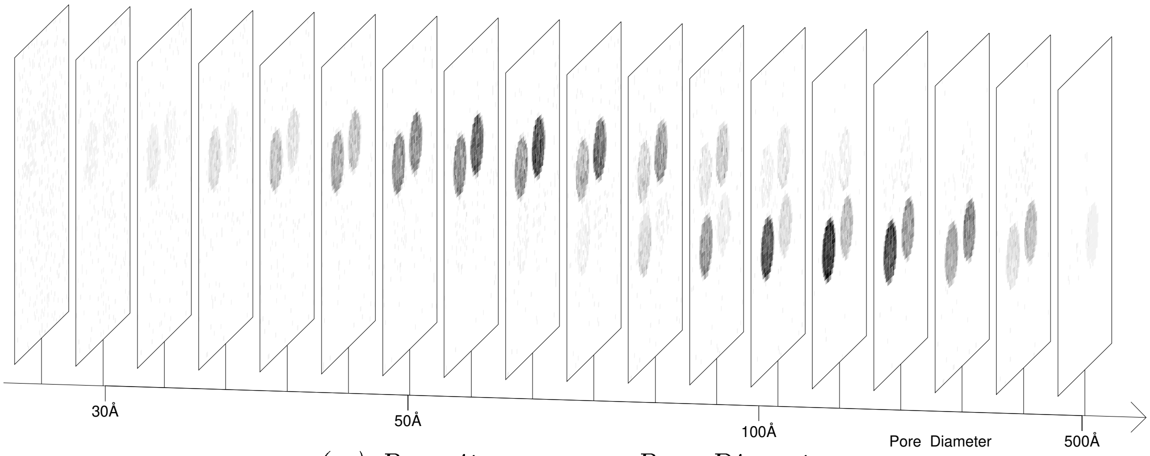
*Map 2: -135° C* *Map 9: -38° C* *Map 12: -22° C* *Map 16: -6° C* *Map 20: 5° C*

*(c:) Monotonic intensity maps from the temperature run.*

Figure 2 (a-c)

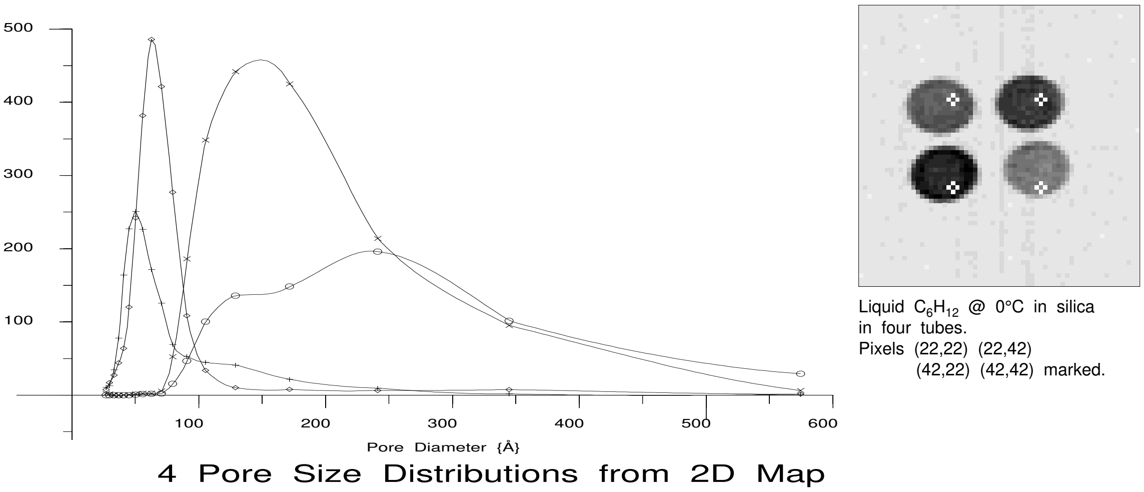



*(d:) Liquid Proton Density images vs. Temperature.*

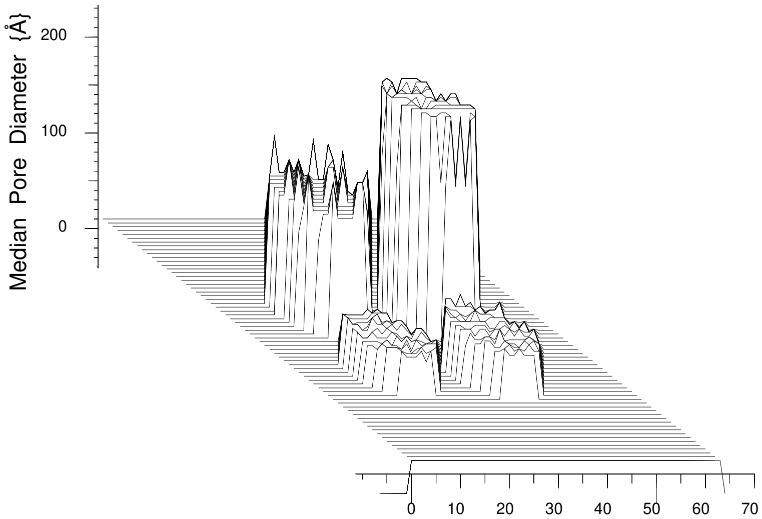



*(e:) Porosity maps vs. Pore Diameter.*

Figure 2 (d-e)




*(f:) Localised Pore Size Distributions.*




*(g:) 2D map of Median Pore Size.*

Figure 2 (f-g)

Figure 2: 2D Cryoporometry.

(a) Representation of the sample with xy porous structure and axial uniformity.

(b) Raw intensity maps showing the sequential melting of the liquid in the 40Å, 60Å, 140Å and 200Å pore diameter silicas.

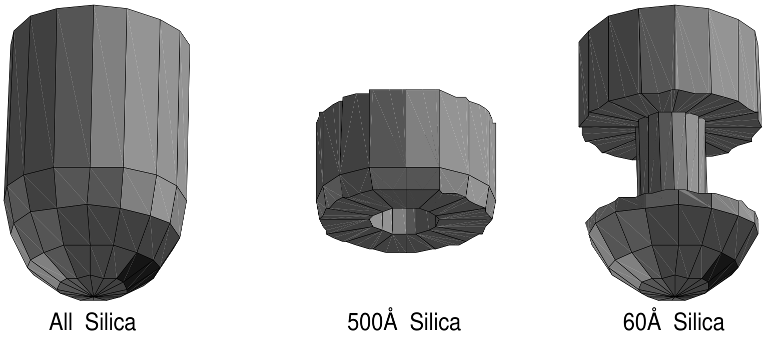
(c) Improved signal to noise after application of monotonicity in melting constraint.

(d) Liquid proton density images showing the melting of the liquid in larger pore sizes at higher temperatures.

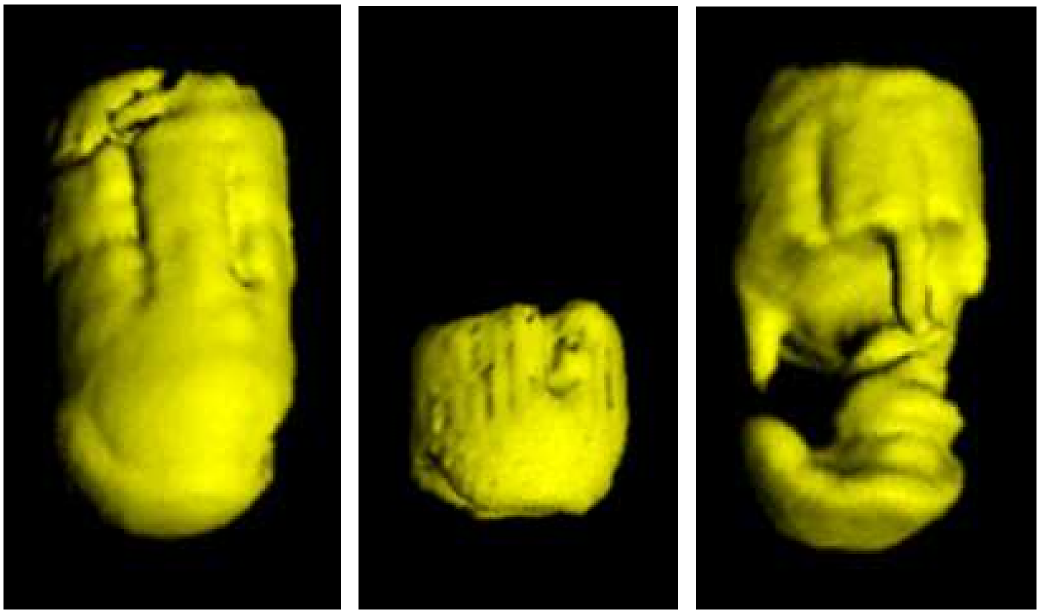
(e) Porosity resolved as a function of pore diameter and xy location, obtained by cryoporometric differentiation w.r.t. temperature and re-mapping of figure 2d.

(f) Localised pore size distributions are extracted from the data in figure 2e, for four pixels (22,22) (22,42) (42,22) (42,42). These fall within the boundaries of the tubes of silica of nominal pore diameter : -+- : 40Å, -◇- : 60Å, -×- : 140Å, -○- : 200Å. The peaks of the distributions agree well with these nominal pore sizes.

(g) A map of the Median Pore Size for the four tube phantom (reflected for ease of viewing).

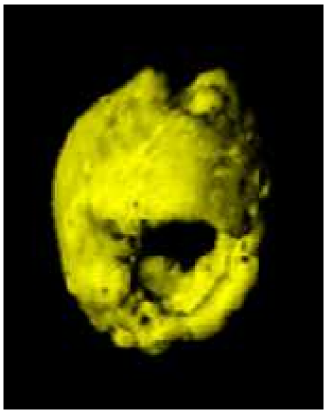



*(a:) Idealised 3D Structure of 500Å plus 60Å silica phantom.*



*Undifferentiated Silica* *500Å Silica* *60Å Silica*

*(b:) 3D resolved Pore Size Structure.*



*(c:) Underneath view of 500Å Silica.*

Figure 3: 3D porous sample resolved into 500Å and 60Å components.