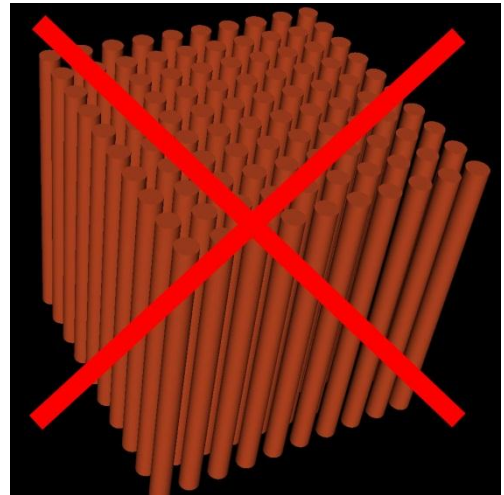# Why interpret output from POROLUX™ porometers using PoreXpert® software?

POROLUX™ porometers are a leading brand worldwide, producing very high quality data. The output is in the form of the difference between a 'wet' curve – gas displacing a proprietary wetting fluid – and a 'dry' curve carried out after the wet curve has been measured. The difference between the two curves gives the sample characteristic curve. The normal method of interpretation is to assume that the slope (first derivative) of this characteristic curve represents the number of pores of each size. However, this implicitly assumes that the void structure comprises a bundle of capillary tubes, which PoreXpert can generate if required (shown on the right). However, the red cross through the structure is there as a reminder that such a structure type is only valid for very few samples, for example track etch membranes. By contrast, most samples studied by porometry have a 3-dimensional fully inter-connected array of voids inside them. PoreXpert generates a realistic structure of this type, for example as shown overleaf and on the brochure cover. You can use the structure to estimate the full filtration characteristic of your sample, including the change of efficiency as it clogs, as well as many other properties listed on the brochure cover.
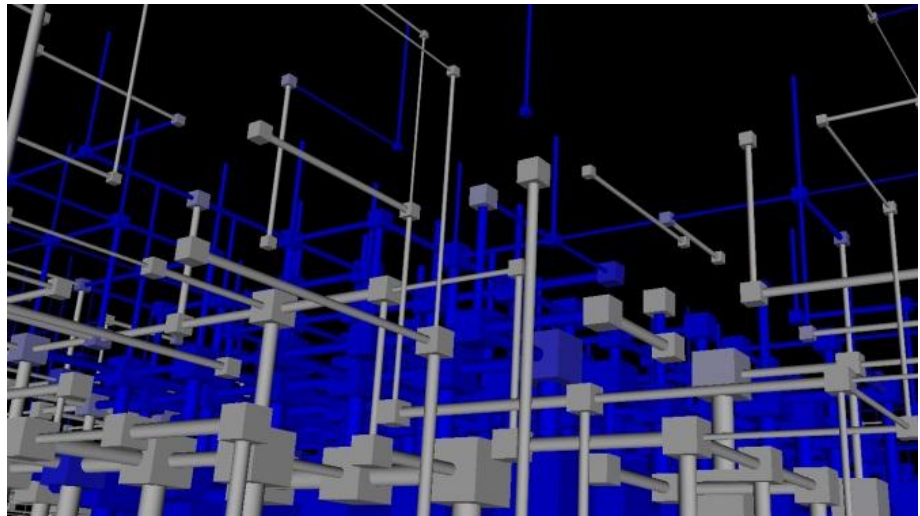
Automated data input

PoreXpert® has been designed for porometry with an exclusive interface with POROLUX™ porometers. The software allows the user to open and export data generated by the POROLUX™ 1000 series or POROLUX™ 100 & 500 series porometers directly into the program – the only additional information required is the porosity. This automated system makes the transition from POROLUX™ datafiles simple, quick and efficient for use with PoreXpert.
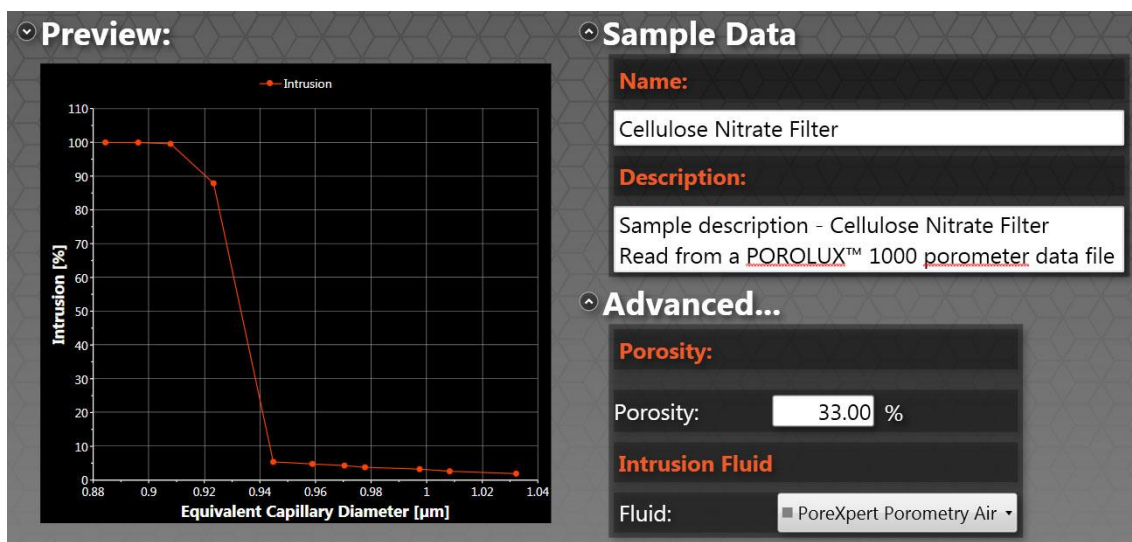
Visualisation of structures

PoreXpert® represents the voids within a porous sample as an interconnected network of cubes connected by cylinders. Although the shapes of the voids are simplified, their cross-sectional sizes and the way they are connected are quantitatively matched to the sample. The entire simulation comprises the 'unit cells' or individual building blocks of the structure connected infinitely in each direction.

The friendly graphical user interface allows you to explore the structure further in both 2D and 3D representations to examine sections of interest in greater detail, such as how far a wetting front has advanced within the sample (shown blue in the diagram).

Targeted modification

is the 'what if' function that allows you to make changes to your structure virtually. This allows you to design new porous materials, optimise the properties of the users existing material or simulate changes that may occur to your sample in real life applications – such as changes in manufacturing conditions, ageing of filters, or weathering of building materials. Examples of possible modifications include resizing features, changing the spacing between them or deleting features all together.

PoreXtract

PoreXtract is a free app that is available on iOS and Android systems. It allows the user to open and display results from the PoreXpert output files.

Hardware and software requirements

PoreXpert is designed to run your computer to its maximum possible capacity in order to achieve the best possible results. However, if your computer cannot handle the demand from the software, the PoreXpert support team are happy to receive batch operations which can be run on PoreXpert Cloud – free of charge during the beta testing period subject to a reasonable usage limit. For specific system requirements please see our website.

Support

Do not forget we are always here to train and help you – see the website for details.