

Review of Pore-Cor Research Suite
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Version 5.0 of the Pore-Cor Research Suite (www.pore-cor.com) is a comprehensive tool for modeling porosity and fluidics in porous structures. The Suite is comprised of four programs, which import user mercury porosimetry data or water retention data, correct for sample compressibility and then calculate and display a three-dimension pore-throat network model. The resulting model can then be utilized in one of the programs to simulate a variety of fluid intrusion or percolation scenarios, as well as estimate bulk properties such as diffusivity and tortuosity.

In contrast to most model equation sets, Pore-Cor does not assume an idealized cylindrical pore shape. Instead, the software uses an anisotropic pore-throat matrix model, which allows for more realistic structures such as dead-end pores, and less accessible internal porosity. The resulting non-Gaussian pore/throat distributions may be disturbing to users who are used to bell curves, especially when comparing the model results with data from other methods.

While not exactly “plug-and-play”, the software is relatively easy to use after some initial training, and the interface rapidly becomes intuitive to the frequent user. While the addition of several step-by-step tutorial files certainly assists in the learning process, the Pore-Cor short course training is highly recommended.

The main limitation to application of the software in certain materials is the requirement that the sample mercury intrusion curve is monomodal, exhibiting a smooth, continuous “S” shape. While the software can, and does, correct for initial uptake at low pressure, the model fitting subroutine can only handle a single inflection point. Nonetheless, multi-modal pore structures can still be analyzed by separating an intrusion curve into a series of monomodal curves and modeling each individually.

The Suite is best utilized as a comparative tool within a series of samples, rather than as an independent means of structural evaluation. In addition, it is important to gather experimental data using methods explicitly designed for subsequent use in Pore-Cor, so that a sufficient model fit can be achieved. These methods do not differ greatly from standard routines, so gathering data of sufficient quality for Pore-Core is not difficult.

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