

# Fuel Cell Porometer

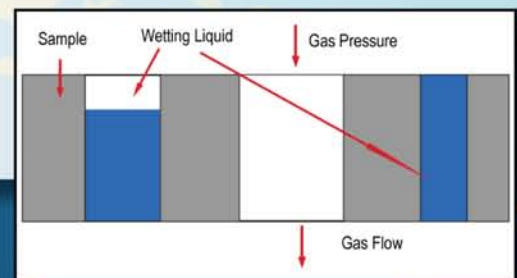
## Description

The PMI Fuel Cell Porometer provides fully automated through-pore analysis including pore-throat diameter, pore size distribution, mean flow pore diameter, and liquid & gas permeability. The porometer's versatility allows the user to simulate operating conditions. The instrument has special features to measure the effects of compressive stress on a sample, test temperature, sample orientation, and layered structure on pore structure characteristics. The fully automated, user-friendly Fuel Cell Porometer is an asset in quality control and R&D environments.



## Principle

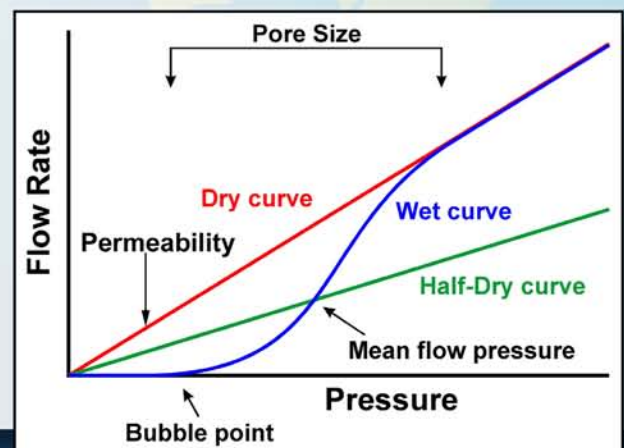
The flow rate of an inert gas through the dry sample is measured with increasing pressure. The sample is brought in contact with a wetting liquid, the liquid spontaneously fills the pores in the sample, and the flow through the wet sample is measured with increasing differential pressure.



## Features

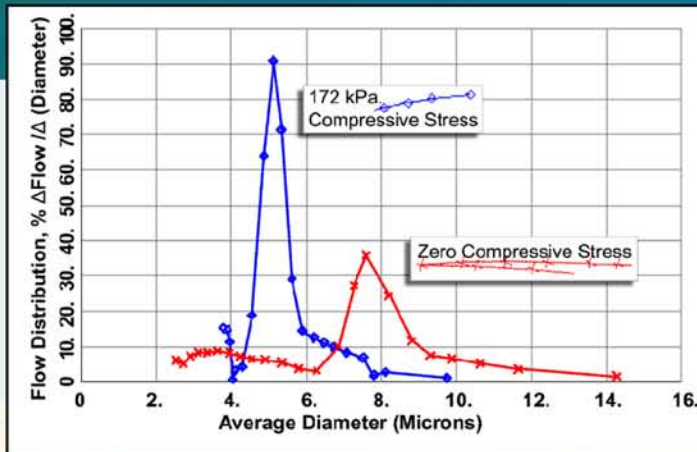
Measured flow rates through dry and wet samples with increasing differential pressure are used to compute many characteristics.

- Pore throat diameters
- The largest pore throat diameter
- Mean flow pore diameter
- Pore distribution
- Gas permeability
- Through pore surface area (Envelope Surface Area)



## Unique Features

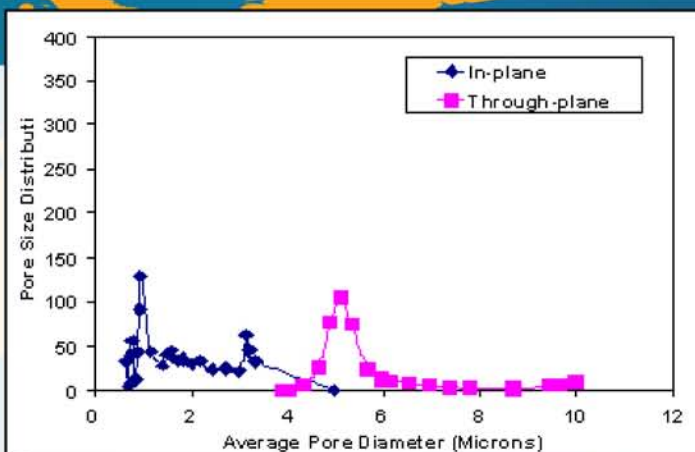
- Characteristics measurable using gas with 0 to 100 % humidity
- Test temperatures can be 200°C and in special situations 800°C
- Pore size measured in samples under compressive stress of up to 1000 psi
- Pore structure of each layer of a multilayer composite
- Pore diameters down to about 0.013  $\mu\text{m}$



## Applications

The performance of many fuel cell components is determined primarily by the characteristics of the pore structure. Flow of reactants and products is determined by the pore size and pore distribution of electrodes, wide range of gas humidity found in many applications can change the pore structure, components subjected to compressive stress during operation can considerably modify the pore size, pore structure of each layer of multilayer composites

often used as fuel cell components can determine the performance of the fuel cell, and reaction rate of reactants is governed by the surface area of through pores. The Fuel Cell Porometer is designed to measure all the relevant pore structure characteristics of fuel cell components.



## Other Products

Bubble Point Tester  
 Capillary Flow Porometer  
 Capillary Condensation Flow Porometer  
 Clamp-On Porometer  
 Complete Filter Cartridge Analyzer  
 Compression Porometer  
 Custom Porometer  
 Cyclic Compression Porometer  
 Envelope Surface Area Analyzer  
 Filtration Media Analyzer  
 High Flow Porometer  
 Integrity Analyzer  
 In-Plane Porometer

Microflow Porometer  
 Nanopore Flow Porometer  
 QC Porometer  
 Average Fiber Diameter Analyzer  
 Diffusion Permeameter  
 Gas Permeameter  
 Liquid Permeameter  
 Vapor Permeameter  
 Water Vapor Transmission Analyzer  
 Liquid Extrusion Porosimeter  
 Mercury/Nonmercury Intrusion Porosimeter  
 Vacuapore  
 Water Intrusion Porosimeter (Aquapore)

BET Liquisorb  
 BET Sorptometer  
 Gas Pycnometer  
 Mercury Pycnometer

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**PMI**

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