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Pore size distribution

Optimize materials with detailed pore size distribution analyses

What is pore size and pore size distribution?

Pore size refers to the diameter of the void spaces within a material. These pores can range from nanometers to micrometers and are a critical to the performance of materials like membranes, catalysts, adsorbents, ceramics, and battery components.

Pore size distribution describes the range and volume filled through different pore sizes within a material. It provides a comprehensive profile showing how many pores fall into specific size ranges.

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Both pore size and distribution are key parameters that influence how a material behaves in real-world applications. Accurate measurement and control enable better material design, consistent performance, and improved process outcomes.

Applications

+ Catalysts and adsorbents

+ Ceramics

+ Membranes and filters

+ Batteries and fuel cells

+ Pharmaceuticals

How to calculate pore size distribution

Several techniques are used to measure pore size distribution. In many cases, combining techniques gives the most complete picture of pore size distribution and material behavior.

Gas adsorption



English



Gas adsorption measures the amount of gas adsorbed at different relative pressures; models such as Barrett-Joyner-Halenda (BJH) and Density Functional Theory (DFT) are used to derive pore size distribution.

- Typical Pore Range: 0.3 – 50 nm (micropores to mesopores)
- Best for: high surface area powders, Metal-Organic Frameworks (MOFs), Covalent organic frameworks (COFs), zeolites, activated carbons

Mercury intrusion porosimetry

Capillary flow porometry (CFP)

Imaging techniques (XRD, SEM, TEM)

Liquid-liquid porometry

Our Solutions

Instruments



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AutoPore V

Density and porosimetry analysis for mesoporous and macroporous materials



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AccuPore

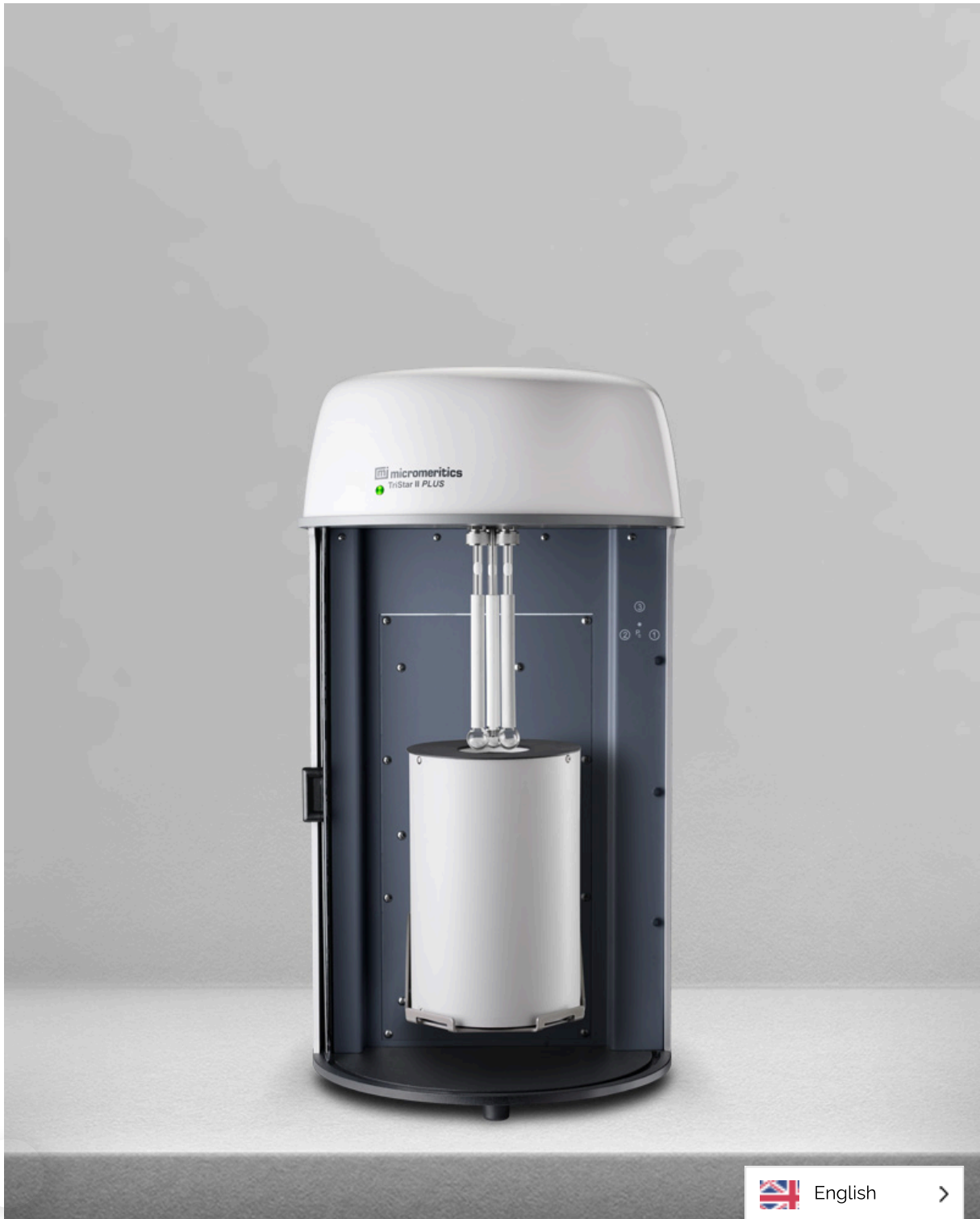
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The easiest, most accurate and versatile measurement of through-porosity

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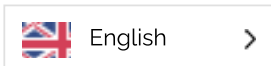
TriStar II Plus

High throughput BET surface area analyzer

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ASAP 2020 Plus

Accelerated surface area and porosity



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ASAP 2460 & 2425

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Surface area and porosimetry system

- Six independently operated analysis ports
- Long-duration Dewars and Micromeritics Isothermal Jackets
- The high-capacity Dewa

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Need Help?

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3Flex

High performance gas adsorption



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The Micromeritics 3Flex offers porosity, chemisorption, surface area and temperature-programmed methods.

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Gemini

Rapid and precise surface area analysis



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- Unique balance-tube differential measurement design
- Eliminates free space errors
- Accurately measures the lowest surface areas with nitrogen; krypton not required
- Fastest available dosing for the shortest total measurement time

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