Leading researchers use the C-Therm Trident Thermal Conductivity Instrument for rapid and accurate characterization of insulation materials and aerogels

Thermal insulation materials are designed to reduce or prevent the transmission of heat in the regions where they are applied. These materials are widely used across applications such as packaging, construction, automotive, aerospace, and protective clothing. A critical performance attribute of any insulation material is its thermal conductivity, materials with low thermal conductivity provide higher thermal resistance and improved insulation performance.

Aerogels, in particular, are increasingly used as advanced thermal barrier materials in electric vehicle battery packs due to their exceptionally low thermal conductivity. Their unique porous structure makes precise and reliable thermal characterization essential for performance validation and material development.

For accelerated characterization, C-Therm’s Trident Thermal Conductivity Analyzer utilizes a range of transient methods, including the Modified Transient Plane Source (MTPS) technique. The MTPS method enables fast, accurate, and repeatable measurement of thermal conductivity with no sample preparation or contact agents required. This makes it an ideal solution for rapid R&D testing and quality control of insulation materials and aerogels.

Additionally, the one-sided testing approach of the patented sensor allows for flexible testing under a wide range of conditions, including varying temperature, humidity, pressure, and controlled environments such as glove boxes, empowering researchers and engineers to evaluate material performance in real-world conditions.

C-Therm Trident Thermal Conductivity Instrument

Aerogels are increasingly being applied as a thermal barrier material in battery packs for electric vehicles due to their extremely low thermal conductivity. C-Therm’s Trident MTPS method provides an effective to rapidly characterize the thermal conductivity performance of aerogels.