

Measurement of: Specific Heat and Enthalpy Change for Solids / Semi Solids up to 1500°C

Equipment: Differential Scanning Calorimetry (DSC) 404 F3, Netzsch, Germany

Property Measured: Specific Heat, Phase Transition Temperature

Photograph (small size)



Basic Principle:

The basic principle underlying DSC technique is that when the sample undergoes a physical transformation such as phase transitions, more or less heat will need to flow to it than the reference to maintain both at the same temperature. Whether less or more heat must flow to the sample depends on whether the process is exothermic or endothermic. For example, as a solid sample melts to a liquid, it will require more heat flowing to the sample to increase its temperature at the same rate as the reference. This is due to the absorption of heat by the sample as it undergoes the endothermic phase transition from solid to liquid. Likewise, as the sample undergoes exothermic processes (such as crystallization) less heat is required to raise the sample temperature. By observing the difference in heat flow between the sample and reference, differential scanning calorimeters are able to measure the amount of heat absorbed or released during such transitions

Capabilities: Differential Scanning Calorimetry (DSC) can be carried out for solid / semi solid substances from ambient to 1500°C in Air / Inert atmosphere. Sample requirement is about 10 mg

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