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Standards, Calibration, and Guidelines in Microcalorimetry. Part 2. Calibration Standards for Differential Scanning Calorimetry (IUPAC Technical Report)
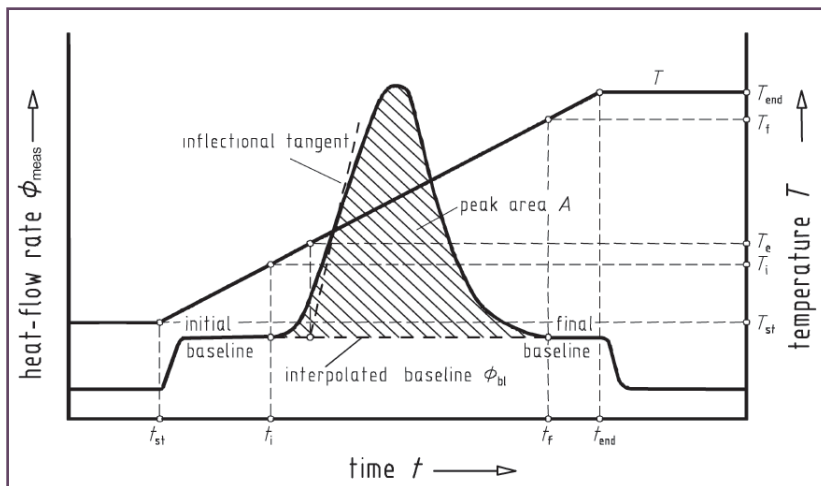
Differential scanning calorimeters are widely used for temperature, heat capacity, and enthalpy measurements in the range from subambient to high temperatures. The aim of this report is to describe calibration procedures and to review reference materials (RMs) for temperature, heat capacity, and enthalpy measurements made by differential scanning calorimetry in the temperature regions from subambient to high. The report focuses on the calibration of the response of the instrument and on the estimation of the measurement uncertainty. The procedures for temperature, enthalpy, and heat-flow rate calibration are given in detail. Calibration on cooling has also been considered. Recommended RMs are listed, and the relevant properties of these materials are discussed. The paper should be helpful to those who wish to participate in laboratory accreditation schemes—involvement with such schemes is now often essential before a work program can be agreed upon. Key components on the route to accreditation are well-defined operating procedures and their validation using certified reference materials.

"Part 1. Standards in Isothermal Microcalorimetry," *Pure Appl. Chem.* **73**(10), 1625–1639 (2001).

www.iupac.org/publications/pac/2006/7807/7807x1455.html

Definition of terms for describing measured curves with the peak representing a transition or reaction in the sample (subscript m denotes measured quantities) in a plot of heat-flow rate and temperature against time.