

Thermal analysis

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Several thermal analysis techniques are available within expertise group Energetic Materials for a wide variety of applications.

Thermogravimetry (TGA)

Determination of the effect on the mass of a sample which is subjected to a temperature program. Examples: Mass loss as a result of decomposition or loss of volatile components. Simultaneously heat effects could be registered with a simplified DSC sensor (explained below). Released gasses can be detected qualitatively with the help of a mass spectrometer (MS) and an Infrared Spectrometer (FTIR). It is also possible to determine mass effects under reduced pressure conditions.



Differential Scanning Calorimetry (DSC)



Determination of the heat flow which occurs when a sample is heated, cooled down or isothermally held at a constant temperature under different atmospheres like nitrogen, air, helium or argon. Physical transitions like melting point, phase transition, glass transition and chemical reactions could be determined quantitatively. It is also possible to perform a DSC analysis under increased pressure (up to 90 bar) and to follow the DSC measurement visually with a microscope.

Heat Flow Calorimetry (HFC)

Determination of small heat effects of a relative big amount of sample (approximately 5 gram, with a maximum of 10 grams) during an isothermal measurement. Mainly used for the prediction of the lifetime of gun propellants. Easy in-house maintenance of the equipment and possible to work with stainless steel and glass sample holders.



Bomb Calorimetry

Determination of the intrinsic calorific value of a sample by burning it in an inert (nitrogen) atmosphere, oxygen or air.



If you see a potential application in one of your project for the use of these techniques please feel free to contact Ellen La Haye by e-mail or phone to discover the possibilities.

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