

Thermogravimetry - Differential scanning calorimetry - Mass spectrometry (TGA-DSC-MS)

Category:

C. Particle Characterisation in and ex-situ

Institute: VITO

Location: Boeretang 200, 2400 Mol, Belgium

Contact Details of Technology Expert:

Steven Mullens

Phone: +32 (0)14 335668

Fax: +32 (0)14 321186

E-mail: steven.mullens@vito.be

Short technology description

STA449C Jupiter (Netzsch) is the state-of-the-art thermogravimetric analyzer, equipped with simultaneous measurement of the heat flow of the sample (differential scanning calorimetry). Flexibility for all applications involving organic and inorganic samples is achieved with a furnace for the broad temperature range of room temperature to 1650°C, heating in oxidising, reducing or vacuum atmosphere and with a multitude of sample carriers and crucibles.

The on-line coupling of a mass spectrometric gas analysis systems to the heated furnace outlet allow the identification of the evolved gases.

The weight and the heat flow as a function of temperature, combined with MS data yield important material information like:

- Thermal stability: maximum working temperature of a material,
- Starting temperature of material decomposition and total weight loss during the oxidation or pyrolysis
- Composition
- Ash rest after (oxidative) heating
- Determination of melting point or phase transformation of materials (possibly in a mixture of compounds)

Main Features (Equipment Capabilities):

- Temperature range: room temperature – 1650 °C
- Weighing range: 5000 mg
- Atmospheres: inert, oxidizing, reducing, static, dynamic, vacuum
- TGA-DSC, TGA-DSC-c_p and TGA-DTA sample carriers for real simultaneous operation
- Heating rates: 0.001 K/min - 100 K/min (dependent on temperature range)
- Coupling to MS (0-300 amu) by heated connection

Typical Samples & Images:

Any further Information: