

Laboratory of thermal analysis

Mgr. Vitalij Antal, PhD, antal@saske.sk

Laboratory of Materials Physics, Head Ing. Pavel Diko, DrSc, dikos@saske.sk

Thermal analysis is used for study of phase transformations of solid materials in a broad temperature range.

Thermal analyzer NETZSCH STA 449 F1 Jupiter

- Differential thermal analysis (DTA)
- Differential scanning calorimetry (DSC)
- Thermogravimetric analysis (TG)
- Simultaneous measurements of DTA+TG and DSC+TG
- Measurements of the specific heat C_p
- Measurements under vacuum
- Temperature range of measurements from 30°C up to 1650°C
- Working atmospheres: Argon, Nitrogen, Oxygen, Air or vacuum

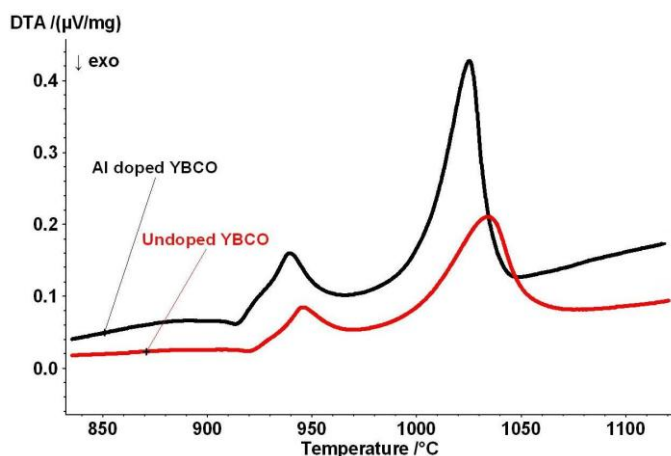


Mass spectrometer NETZSCH QMS 403 C Aëolos

- High precision of gas composition measurements up to 300 amu
- Simultaneous analyses of evolving gasses with DTA, DSC and TG

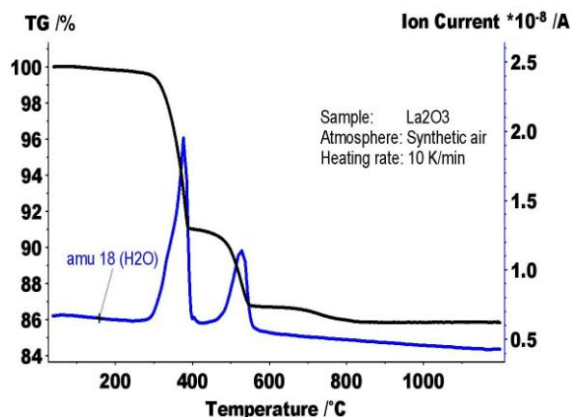
Application

- Measurements of thermal stability, chemical decomposition, oxidation
- Absorption and desorption
- Research of phase transition changes and enthalpy
- Research of chemical reactions and their kinetic
- Chemical identification of evolved gases and samples



DTA measurements of peritectic temperature of $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ superconductors doped with Al and without doping

DCS/TG sample holder



TG measurements of La_2O_3 and evolved H_2O