**Thermogravimeter**

**Mass Spectrometer**

**Equipment:** [Thermogravimeter STA449F1 (Netzsch) connected](http://www.jh-inst.cas.cz/nanocentrum/instruments.php?stav=view_detail&dokument=12) with Mass Spectrometer (Anamet)

**No. of Equipment: UFCH14**

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**Equipment Description**

Description of equipment: Thermogravimeter STA449F1 (Netzsch) allows is devoted to measure: thermogravimetry (TG) and differential scanning calorimetry (DSC). TG determine sample mass loss during the thermal treatment and DSC determines the heat capacity of the sample. The thermal analysis can be performed in oxygen, argon, helium or steam atmosphere. The thermogravimeter is connected to Mass spectrometer QMS 403C (Anamet), which allows to analyse products of the decomposition.

**Specification of expertise relevant to NanoEnviCz workpackages:**

**WP3**c,d,f

**Detailed description of expertise**

**Please, specify the main research topics connected with equipment**:

Analysis of modified carbon nanostructures with aiming to determine content of impurities, content of functional groups, decomposition temperature and thermal stability.

**Please, specify the secondary research topics connected with equipment**:

Quantification of the functional groups on nanoparticles, determination of organic content in core-shell nanoparticles

**Keywords describing research area:**

Carbon nanostructures, thermal analysis, thermal decomposition, calorimetry

**Competence**

**Relevance for applied and industrial research:**

**Relevance for fundamental studies:**

Analysis of materials in oxygen and inert atmosphere during thermal treatment. Determination of the amount of functional groups on carbon nanotubes and detrmination of the content of impurities.[1][2].

**References**

[1] H. Hajova, Z. Kominkova, A. Santidrian, O. Frank, L. Kubac, F. Josefik, et al., Preparation and Charge-Transfer Study in a Single-Walled Carbon Nanotube Functionalized with Poly(3,4-ethylenedioxythiophene), J. Phys. Chem. C. 119 (2015) 21538–21546. doi:10.1021/acs.jpcc.5b06619.

[2] B. Pacakova, Z. Kominkova, J. Vejpravova, A. Mantlikova, M. Kalbac, Analysis of metal catalyst content in magnetically filtered SWCNTs by SQUID magnetometry, J. Mater. Sci. 50 (2015) 2544–2553. doi:10.1007/s10853-014-8813-z.