Level: Master – Master of Chemistry in Analytical Chemistry

Course title: Thermal Analysis of complex compounds

Status: elective

ECTS: 6

Requirements: Teacher's decision.

Learning objectives:

Acquiring information and knowledge on application of thermal analysis in characterization of inorganic compounds, acquiring knowledge for choice of adequate technique for thermal analysis of coordination compounds, significance of combined methods for characterization of compounds.

Learning outcomes:

Students should be able to apply methods of thermal analysis for characterization of coordination compounds, to understand principles of combining methods of analysis in order to obtain data on thermal behaviour of compounds, to adequately interpret experimental data collected by different techniques of characterization, to estimate the temperature range of practical applicability of the compounds.

Syllabus

Theoretical instruction:

The effect of temperature change on the properties of materials. Different techniques of thermal analysis (TA): thermogravimetry (TG) and derivative thermogravimetry (DTG), differential thermal analysis (DTA) and differential scanning calorimetry (DSC). Simultaneous methods of thermal analysis. Analysis of evolved gases (EGD and EGA).

Practical instruction:

Thermal stability of known and newly synthesized coordination compounds. Mechanism of thermal decomposition. Determination of kinetic parameters of reactions in solid state. Determination of melting point, polymorph transformations, purity determination. Synthesis of new compounds by solid-state reactions. Thermal measurement of actual samples.

Weekly teaching load				Other:
Lectures: 2	Exercises: 2	Other forms of teaching:	Student research:	