

Course title: Selected methods of materials characterization – selectable/ regular course

Number of contact hours: 30 hours (15 h lecture, 15h laboratories)

ETCS credits: 2

Course description: The laboratory consists of exercises utilizing different methods of characterization of organic, inorganic and macromolecular compounds, including spectroscopic techniques - infrared spectroscopy, UV-Visible spectroscopy and nuclear magnetic resonance, scanning electron microscopy, and thermal analysis methods – thermogravimetry and differential scanning calorimetry. The lecture will deliver knowledge on the fundamentals of different methods of characterization of organic, inorganic and macromolecular compounds, including spectroscopic techniques - infrared spectroscopy, UV-Visible spectroscopy and nuclear magnetic resonance, scanning electron microscopy, and thermal analysis methods – thermogravimetry and differential scanning calorimetry

Education effects (P7S_UW, P7S_WG):

-knowledge: student knows the most important methods of characterization of organic, inorganic and macromolecular compounds; recognizes their critical features and limitations;

-skills: student can choose the proper method for characterization of organic, inorganic and macromolecular compounds; knows how to prepare a meaningful report from the performed laboratory exercises

-social: student is able to work independently and in the group both at the laboratories and during preparation of the report.

Literature: [1] Williams DH, Fleming I., Spectroscopic Methods in Organic Chemistry, McGraw-Hill Education, London, 2007

[2] Brown M (Ed.), Handbook of Thermal Analysis and Calorimetry, Vol 1:Principles and Practice, Elsevier, New York 1998.

[3] Reimer L., Scanning Electron Microscopy, Springer, 1998

Assessment method: Final test, completing the laboratories (presence and delivering of reports from each performed exercise)

Prerequisites: Basic knowledge in organic and inorganic chemistry and technology

Primary target group: All specialties students

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