

Course title:	Introduction to Thermal Analysis
Institute/Division:	Institute of Materials Engineering, Faculty of Materials Engineering and Physics
Number of contact hours:	30 hours
Course duration:	1 semester
ECTS credits:	5

Course description:

Thermal Analysis (TA) techniques are used in a wide range of disciplines, from pharmacy and foods to polymer science, materials and glasses. TA is used wherever there is a need to analyze the sample behaviour are observed under controlled heating or controlled cooling conditions. Therefore TA has found increasing use both in basic characterization of materials and in a wide range of applications in research, development and quality control in industry and academia.

The course covers topics on:

Thermogravimetric Analysis (TGA),

Differential Thermal Analysis (DTA) method

Differential Scanning Calorimetry (DSC) method including the new approach of Fast Scanning DSC,

Dynamic Mechanical Analysis (MDA) method,

Thermomechanical Analysis (TMA) method,

Dilatometric method

Application of thermal analysis

Literature:

1. Paul Gabbott - Principles and application of thermal analysis 2008 Blackwell Publishing Ltd
2. Michio Sorai, Nihon Netsusokutei Gakkai - Comprehensive handbook of calorimetry and thermal analysis 2004 J. Wiley
3. Handbook of Thermal Analysis and Calorimetry: Recent Advances, Techniques and Applications 2018 Elsevier

Course type:	lectures (15 hours), classes (15 hours)
Assessment method:	oral answer, report on classes exercises
Prerequisites:	none
Primary target group:	Materials Science
Lecturer:	dr hab. inż. Marek Hebda, prof. PK
Contact person:	Marek Hebda, e-mail: mhebda@pk.edu.pl