



DOCTORAL
SCHOOL
AT GDAŃSK
UNIVERSITY
OF TECHNOLOGY

Course: Experimental methods for materials characterisation

Teaching hours: 30 h

Prerequisites: The course is primarily open to all PhD students at Gdansk University of Technology.

This course is compulsory for PhD students assigned to Materials science tracks at Doctoral School at Gdańsk University of Technology

Course outline

Content

The course is designed to deliver to students fundamental knowledge on selected experimental methods used for characterisation of solid materials. Throughout the course the students should gain skills to analyse the elemental composition of materials; to analyse phase composition of crystalline solids, refinement of unit cell parameters; to analyse selected thermal properties of materials; to use optical characterisation methods as well as scanning electron microscopy. The students should also get familiar with methods of electrical properties characterisation.

General topics coverage:

1. X-ray Diffractometry
2. X ray Photoelectron Spectroscopy
3. Thermogravimetry
4. Optical technique for bulk and thin film analyses
5. Scanning Electron Microscopy
6. Electrical Properties Characterisation

Teaching mode

There will be 30 hours of laboratories to be completed during the second semesters of PhD programme. The teaching method is basically laboratory activity combined with a short introduction. During the course students will be asked to prepare a lab report. The course is entirely delivered in English.

Examination

A wide range of formative feedback from your tutor, questions and practical individual and group exercises will be used by tutors to aid learning as will exercises to encourage the researchers' abilities in critical and reflective learning. The exact nature of these assessment devices will be at the discretion of the tutor. The PhD students will be required to demonstrate their skills, knowledge and understanding of experimental methods for materials characterisation during the lab activities and a report preparation.

Fundamental readings:

1. e.g. Physical Methods for Materials Characterisation, P. E. J. Flewitt and R. K. Wild
2. Scientific papers