KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

Course title	ECTS code
Physical chemistry of solid	13.3.0397

Name of unit administrating study

Faculty of Chemistry

Studies

faculty	field of study		
Wydział Chemii	Chemia	type	pierwszego stopnia
		form	stacjonarne
		specialty	analityka i diagnostyka chemiczna
		specialization	wszystkie

Teaching staff

dr hab. Artur Sikorski, profesor uczelni

Forms of classes, the realization and number of hours

Forms of classes

Lecture

The realization of activities

classroom instruction

Number of hours

Lecture: 15 hours

ECTS credits

1
classes - 15 h
tutorial classes – 2 h
student's own work – 8 h

Total: 25 h - 1 ECTS

The academic cycle

2023/2024 summer semester

Type of course

obligatory

Language of instruction

polish

Teaching methods

multimedia-based lecture

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

Graded credit

Assessment methods

written exam - test containing open and closed questions

The basic criteria for evaluation

• a test exam consisting of 20-25 open and closed questions, covering issues mentioned in the lecture's program content;
• final grade according to the scale of grades given in the Study Regulations
• additional written exam for students who did not obtain the required 51% in the first term

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements
completed courses in "General chemistry" and "Physical chemistry"

B. Prerequisites
none

Aims of education

Familiarizing of students with definition and structure of solid, with basic physicochemical properties of solids, and laws describing them, with classification of solids based on various criteria and with relationships between structure of solids and their physicochemical properties

Course contents

The role of physicochemistry of solid in modern chemistry. Definition of solids. Solid amorphous substances, crystals and quasicrystals. Unit cell. Crystallographic systems. Crystal lattice. Space lattice. Symmetry in crystal morphology. Classes of symmetry and their symbolism. Space groups

and their symbolism. Classification of crystals based on chemical structure and stoichiometric ratios. Structures of selected elements and chemical compounds. Techniques used for determining the structure and properties of solids. Relationships between structure and selected physicochemical properties of solids

Bibliography of literature

Literature required to pass the course
1. Bojarski Z., Gigla M., Stróż K., Surowiec M., Krystalografia, PWN, 2008.
2. Trzaska Durski Z., Trzaska Durska H., Podstawy krystalografii strukturalnej i rentgenografii, Oficyna Wydawnicza. Politechniki Warszawskiej, 2003.
3. Atkins P. Chemia fizyczna, PWN, 2016.
Extracurricular readings
1. Penkala, T., Zarys Krystalografii, PWN, 1983.
2. Luger, P., Rentgenografia strukturalna monokryształów, PWN, 1989.
3. Wells, A. F., Strukturalna chemia nieorganiczna, WNT, 1993.

The learning outcomes (for the field of study and specialization)

Knowledge

Student: knows the role of physicochemistry of solid in modern chemistry, knows definition of solid, characterizes crystallographic systems, knows different types of unit cells, distinguishes the crystal lattice from the space lattice, characterizes the various elements of the space lattice (directions, planes), lists and describes the elements of point and translational symmetry, describes different types of crystal packing of atoms, ions and molecules in crystal lattice, describes various criteria of classifications of solids, characterizes the structure of selected elements and chemical compounds, determines the relationship between structure and physicochemical properties of compounds

Skills

Student:
• organizes workshop.
• solves scientific problems, critically refers to the results obtained,
• proposes alternative methods of solving scientific problems,
• analyzes the results obtained based on their knowledge,
• draws conclusions based on experimental data,
• verifies the results based on literature data

Social competence

Student:
• strives to acquire knowledge,
• works independently, and in a team performing different roles in it,
• shows creativity during the presentation of results,
• engages in solving scientific problems,
• cares for the acquisition of knowledge by others,
• discusses scientific problems (theses)

Contact

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