GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Identification of materials, PG_00048407		
Field of study	Chemistry		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Chemistry and Technology of Functional Materials -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Radosław Pomećko	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	15.0	0.0	0.0	15

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	15	5.0	30.0	50

Subject objectives

The aim of the course is to link the relationship between the structure of materials and their physical and chemical properties, and to familiarize with experimental methods that enable the measurment of these features.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U06] can analyze the functioning of equipment, apparatus and technology lines used in laboratories and chemical industry, and can recognize and propose methods to solve the simple engineering tasks which he can meet as an Engineer and select and use routine methods, chemical apparatus and tools to solve practical engineering tasks, including also technological processes; can himself/herself read and make technical drawings using CAD software	The student knows how to determine the physical and physicochemical characteristics of the material, important for its function. The student knows and can propose methods to measure these properties	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

Subject contents	Course content – laboratory Program laboratoriów obejmuje trzy pięciogodzinne bloki zajęć obejmujące: 1) Blok pierwszy: a) Przedstawienie założeń przedmiotu. Wprowadzenie teoretyczne do zajęć. Zasady BHP b) Realizacja ćwiczenia: Synteza i charakterystyka polimerów przewodzących (obejmujące: syntezę polianiliny oraz badania jej elektrchromizmu, oraz właściwości pojemnościowych, syntezę i charakterystykę elektrolitów żelowych) 2) Blok drugi: Realizacja ćwiczenia: Synteza, identyfikacja polimerów (obejmujące: syntezę metakrylanów oraz żywic formaldehydowych oraz badania IR otrzymanych substancji uzupełnione o badania gęstości, palności, zawartości azotu) 3) Blok trzeci: a) Realizacja ćwiczenia: Synteza, identyfikacja układów hydrożelowych (obejmujące: syntezę hydrożeli opartych na PVA lub żel krzemionkowy, charakteryzacja metodami IR, badanie chłonności otrzymanych materiałów. Badania pamięci kształtów hydrożeli PVA) b) Pisemne zaliczenie kursu
Prerequisites and co-requisites	Basics of organic chemistry, electrochemistry and physical chemistry

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	70.0%	50.0%
	60.0%	50.0%

Recommended reading

Basic literature	Handbook of Materials Characterization, S.K. Sharma, Springer 2018 Chemia polimerów, Jan Pielichowski, Andrzej Puszyński, Fosze, Rzeszów 2015 "Polymer electrolytes", F.M. Gray, VCH 1998
Supplementary literature	Handbook of Spectroscopy: Second, Enlarged Edition, G. Gauglitz, D.S. Moore, WileyVCH 2014 Springer Handbook of Materials Measurement Methods, H. Czichos, T. Saito, L. Smith, Springer, Berlin, Heidelberg, 2006
eResources addresses	

Example issues/ example questions/ tasks being completed	- the impact of copolymer structure on its physicochemical properties - structure of organic and inorganichydrogels - structure of polymers and their electro-conductive properties
Practical activites within the subject	Not applicable

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