GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Degradation of Polymers, PG_00054583		
Field of study	Materials Engineering, Materials Engineering, Materials Engineering		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2023/2024
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Polymers Technology -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Janusz Datta	
	Teachers	prof. dr hab. inż. Janusz Datta dr hab. inż. Łukasz Piszczyk dr inż. Ewa Głowińska	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

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	30	5.0	15.0	50

Subject objectives

Understanding the processes of degradation of selected polymeric materials.Knowing the relationship between the chemical structure of the polymers and their resistance to degradation.Knowledge of methods to assess the degree of degradation and methods of increasing the resistance to degradation of polymeric materials.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_K01	The student understands the need to learn and is aware of their own limitations	[SK3] Assessment of ability to organize work
K7_W04	The student has in-depth knowledge in the field of materials science, has a basis for describing the relationship between the chemical composition, structure and properties	[SW1] Assessment of factual knowledge
K7_U01	The student is able to obtain information from literature, also in English, and is able to draw conclusions and justify opinions	[SU2] Assessment of ability to analyse information
K7_W03	The student has in-depth knowledge of chemistry, polymer degradation, useful for solving problems in the field of materials science	[SW1] Assessment of factual knowledge

Subject contents

The impact of physical factors on polymers. Characteristics of degradative processes occurring in the polymers under the influence of the chemical and physical factors that affect on them during use and storage. Thermo-oxidative degradation, photodegradation, irradiation, atmospheric degradation,hydrolytical degradation, biodegradation., mechanical degradation. Aids to prevent degradation of the polymers.

Prerequisites and co-requisites

Basic knowledge of chemistry and technology of polymeric materials

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Final test</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Praca zbiorowa, Tworzywa sztuczne w praktyce, red. J.T, Haponiuk, 2. J. Pielichowski, Puszyński A., Technologia tworzyw sztucznych, Wydawnictwa Naukowo-Techniczne, Warszawa 2003.3. red. Z. Florjańczyk, S. Penczek, Chemia polimerów, t. 1, 2, 3, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1998.4. E. Grzywa, J. Molenda, Technologia Podstawowych syntez organicznych, t. 1, t. 2, Wydawnictwa Naukowo-Techniczne, Warszawa 2000.5. K. Czaja, Poliolefiny, Wydawnictwa Naukowo-Techniczne, Warszawa 2005.</td></tr>
<tr><td>Supplementary literature</td><td>The journal "Polymer Degradation and Stability"</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">1.) How can the end products of polymer thermodegradation be identified?

2) Does the degradation of biopolymers differ from polymers? Present your answer on specific examples</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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