

Subject card

Subject name and code	Monographic lecture - Research methods in supramolecular chemistry, PG_00050892						
Field of study	Chemistry						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		3.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Department of Analytical Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Dorota Zarzeczkańska				
	Teachers						
Lesson types	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		40.0	75
Subject objectives	introducing students to: current issues of coordination and supramolecular chemistry, evaluation of individual physicochemical methods in terms of molecular recognition, introducing students with spectrophotometric and electrochemical methods used in the study of equilibria in solution, familiarize students with computational methods and modeling of equilibria in solution, developing the ability to select research techniques for characterizing intermolecular interactions						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEMMU2_W01] Uses knowledge of spectroscopic methods of chemical compound analysis.	Describes the basic methods used in the physicochemical characterization of equilibria in coordination and supramolecular systems.	[SW4] test/exam - oral or written
	[CHEMMU2_W11] Demonstrates general knowledge about the current trends in the development of chemistry as a science and the latest discoveries in this field.	Sees connections between the type of interactions and the thermodynamic and kinetic stability of supramolecular connections.	[SW4] test/exam - oral or written
	[CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied.	1. Defines coordination and supramolecular systems. 2. Recognizes the relationship between the type of interactions and the thermodynamic and kinetic stability of supramolecular connections.	[SW4] test/exam - oral or written
	[CHEMMU2_K01] Knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so.	1. Understands the need to independently search for information in the literature regarding the latest scientific reports. 2. Recognizes the connection between research on supramolecular interactions and the development of modern technologies and medicine	[SK1] oral statement/conversation/discussion [SK4] test/exam - oral or written
Subject contents	Supramolecular chemistry and coordination chemistry. Methods for determining the stoichiometry of interactions and determining equilibrium constants. Review of experimental methods, suitability analysis, measurement techniques. Calorimetric methods, thermodynamic aspects of supramolecular interactions. Extraction methods. Spectroscopic methods: NMR, IR, UV-Vis, MS (measurement and computational techniques). Chromophore systems in supramolecular chemistry. Graphical methods for determining the equilibrium model and computational methods (Henderson-Hasselbach's method, Rosse Drago and others). Electrochemical methods in the study of equilibria: conductometry, potentiometry, voltammetric methods. Methods of testing modified surfaces. Nanotechnology and supramolecular methods		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	three partial tests	51.0%	100.0%
Recommended reading	Basic literature	M. Ciesielska J. Starosta, M. Wasielewski - Wstęp do chemii koordynacyjnej, PWN 2010 H. Dodziuk - Wstęp do chemii supramolekularnej, Wydawnictwo UW 2008 Ch. A. - Analytical Methods In Supramolecular Chemistry, Wiley VCh 2007	
	Supplementary literature	J. Polster, H. Lachman - Spectroscopic Titration, VCH 1986	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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