

## Subject card

<del> </del>					Glasses and amorphous materials, PG_00039754							
Materials Engineering, Materials Engineering												
October 2022		Academic year of realisation of subject		2022/2023								
second-cycle studies		Subject group		Optional subject group Subject group related to scientific research in the field of study								
Full-time studies		Mode of delivery			at the university							
1		Language of instruction			Polish							
1		ECTS credits			2.0							
general academic profile		Assessment form			assessment							
Faculty of Applied Phy	nematics											
Subject supervisor dr inż. Leszek Wicikowski												
Teachers		dr inż. Leszek Wicikowski										
Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM					
Number of study hours	15.0	0.0	0.0	0.0		15.0	30					
E-learning hours included: 0.0												
Learning activity			Participation in consultation hours		Self-study		SUM					
Number of study 30 hours			1.0		19.0		50					
The main aim is to present the fundamental of the glassy state including structure, methods of preparation and application of glassy materials												
Course outcome		Subject outcome Method of verification										
		methods used in the study of amorphous materials. He can			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation							
K7_U01					[SU2] Assessment of ability to analyse information							
Glassy state of matter. Glass transition. Viscisity.Glass formation criteria. Random network. Radial distribution function. Glassforming oxides and modificators. Structure of glass.Classification of inorganic oxide glasses. Crystallization processes and phase separation in glasses. Glass-ceramics Glass technology. Typical silicate, borate, phosphate and tellurite systems.												
Fundamental knowledge in physics and chemistry												
Subject passing criteria		Passing threshold			Percentage of the final grade							
Seminar		50.0%		50.0%								
Colloquim		50.0%		50.0%								
Basic literature	J.E. Shelby, Introduction the glass science and technology, RSC 2005  A.K. Varshneya. Fundamentals of inorganic glasses, Academic Press											
	Full-time studies  1 1 general academic pro Faculty of Applied Ph Subject supervisor Teachers  Lesson type Number of study hours E-learning hours inclu Learning activity  Number of study hours  The main aim is to pro and application of gla Course outo K7_W05  K7_U01  Glassy state of matter distribution function. oxide glasses. Crysta technology. Typical si Fundamental knowled  Subject passin Seminar Colloquim	Full-time studies  1 1 general academic profile Faculty of Applied Physics and Math Subject supervisor Teachers  Lesson type Lecture Number of study hours E-learning hours included: 0.0  Learning activity Participation in classes included plan Number of study hours  The main aim is to present the fundate and application of glassy materials  Course outcome  K7_W05  K7_U01  Glassy state of matter. Glass transiting distribution function. Glassforming coxide glasses. Crystallization process technology. Typical silicate, borate, Fundamental knowledge in physics a Subject passing criteria  Seminar Colloquim	Full-time studies  Full-time studies  Mode of deal Language of ECTS cred general academic profile  Faculty of Applied Physics and Mathematics  Subject supervisor  Teachers  Lesson type  Lecture  Number of study hours  Learning hours included: 0.0  Learning activity  Participation in didactic classes included in study plan  Number of study hours  Participation in didactic classes included in study plan  Number of study hours  Course outcome  K7_W05  The main aim is to present the fundamental of the grand application of glassy materials  Course outcome  K7_W05  The student competency diffraction analyzes condition analyzes condition function. Glassforming oxides and mocoxide glasses. Crystallization processes and phase technology. Typical silicate, borate, phosphate and Fundamental knowledge in physics and chemistry  Subject passing criteria  Pass  Seminar  Colloquim  Pass  Seminar  R. H. Doremu  J.E. Shelby, In	realisation of subject second-cycle studies  Subject group  Full-time studies  Mode of delivery  Language of instruction  ECTS credits general academic profile  Faculty of Applied Physics and Mathematics  Subject supervisor  Teachers  Lesson type  Lecture  Tutorial  Laboratory  Number of study hours  E-learning hours included: 0.0  Learning activity  Participation in didactic classes included in study plan  Number of study hours  The main aim is to present the fundamental of the glassy state included application of glassy materials  Course outcome  K7_W05  The student can describe the methods used in the study of amorphous materials. He can interpret the results obtained  K7_U01  The student can find source materials related to a topic a evaluate their quality.  Glassy state of matter. Glass transition. Viscisity, Glass formation distribution function. Glassforming oxides and modificators. Structure of the student can find source materials related to a topic a evaluate their quality.  Glassy that of matter. Glass transition. Viscisity, Glass formation distribution function. Glassforming oxides and modificators. Structure of the student can find source materials related to a topic a evaluate their quality.  Glassy that of matter. Glass transition. Viscisity, Glass formation distribution function. Glassforming oxides and modificators. Structure of the student can find source materials related to a topic a evaluate their quality.  Glassy that of matter. Glass transition. Viscisity, Glass formation distribution function. Glassforming oxides and modificators. Structure of the student can find source materials related to a topic a evaluate their quality.  Glassy that of matter. Glass transition. Viscisity, Glass formation of the student can find source materials related to a topic a evaluate their quality.  Glassy that of matter. Glass transition. Viscisity, Glass formation of the student can find source materials related to a topic a evaluate their quality.  Glassy that of matter. Glass transition. Viscisity, Glass	Full-time studies  Mode of delivery  Language of instruction  ECTS credits  general academic profile  Faculty of Applied Physics and Mathematics  Subject supervisor  dr inż. Leszek Wicikowski  Lesson type  Lecture  Tutorial  Laboratory  Project  Number of study  hours  Learning hours included: 0.0  Learning activity  Participation in didactic classes included in study plan  Number of study  hours  Participation in didactic classes included in study plan  Number of study  hours  The main aim is to present the fundamental of the glassy state including stand application of glassy materials  Course outcome  K7_W05  The student can describe the methods used in the study of amorphous materials. He can interpret the results obtained from X-ray diffraction and thermal analyzes concerning amorphous materials. The student can find source materials related to a topic and evaluate their quality.  Glassy state of matter. Glass transition. Viscisity, Glass formation criteria, distribution function. Glassforming oxides and modificators. Structure of oxide glasses. Crystallization processes and phase separation in glasses technology. Typical silicate, borate, phosphate and tellurite systems.  Fundamental knowledge in physics and chemistry  Subject passing criteria  Passing threshold  Seminar  50.0%  R. H. Doremus Glass Science, Wiley  J.E. Shelby, Introduction the glass s	realisation of subject  second-cycle studies  Subject group  Option Subject group  Option Subject group  Option Subject group  It all Language of instruction  It ECTS credits  general academic profile  Assessment form  Assessive form  Assessment form  Assessment form  Assessive form  Assessive form  Assessment form  Assessive form  Assessive form  Assessment form  Assessive form	realisation of subject second-cycle studies  Subject group  Optional subject group relates research in the field.  Full-time studies  Mode of delivery  1 Language of instruction  1 ECTS credits 2.0 general academic profile Assessment form  Faculty of Applied Physics and Mathematics  Subject supervisor  Gr in2. Leszek Wicikowski  Lesson type Lecture Tutorial Laboratory Number of study hours  Feleaming hours included: 0.0 Learning activity Participation in didactic classes included in study plan  Number of study hours  Course outcome  K7_W05  The main aim is to present the fundamental of the glassy state including structure, methods of pamorphous materials. He can interpret the results obtained from X-ray diffraction and thermal analyzes concerning amorphous materials  K7_U01  The student can find source materials related to a topic and evaluate their quality.  Glassy state of matter. Glass transition. Viscisity, Glass formation criteria. Random network. Radistribution function. Glassforming oxides and modificators. Structure of glass. Classification of oxide glasses. Crystallization processes and phase separation in glasses. Glass-ceramics Glastechnology. Typical silicate, borate, phosphate and tellurite systems.  Fundamental knowledge in physics and chemistry  Subject passing criteria  Passing threshold  Percentage of the Seminar  50.0%  R. H. Doremus Glass Science, Wiley 1973  J.E. Shelby, Introduction the glass science and technology.					

Data wydruku: 09.04.2024 12:47 Strona 1 z 2

	Supplementary literature	Additional materials (electronic version) from lecturer			
	eResources addresses	Adresy na platformie eNauczanie:			
tasks being sampleted	Glassy state of matter. Glass transition. Viscisity.Glass formation criteria. Random network. Radial distribution function. Glassforming oxides and modificators. Structure of glass.Classification of inorganic oxide glasses. Crystallization processes and phase separation in glasses. Glass-ceramics Glass technology. Typical silicate, borate, phosphate and tellurite systems				
Work placement	Not applicable				

Data wydruku: 09.04.2024 12:47 Strona 2 z 2