

Title (Fizykochemia polimerów)Physical Chemistry of Polymers	Code 1010707271010720596
Field Chemical Technology	Year / Semester 4 / 7
Specialty Polymer Technology	Course core
Hours Lectures: 2 Classes: - Laboratory: 3 Projects / seminars: -	Number of credits 8
	Language polish

Lecturer:

prof. dr hab. Józef Garbarczyk
Instytut Technologii i Inżynierii Chemicznej
pl. M. Skłodowskiej-Curie 2
60-965 Poznań
tel. 061 6653643, fax. 061 6653643
e-mail: jozef.garbarczyk@put.poznan.pl

Faculty:

Faculty of Chemical Technology
ul. Piotrowo 3
60-965 Poznań
tel. (061) 665-2351, fax. (061) 665-2852
e-mail: office_dctf@put.poznan.pl

Status of the course in the study program:

-The course is within specialist subjects

Assumptions and objectives of the course:

-The student will obtain knowledge in the scope of physical chemistry of polymers which allows him to understand principal differences between small and high molecular weight molecules. This knowledge is essential for polymer technology and polymer processing.

Contents of the course (course description):

-Introduction to polymer science ? from small to big molecules. Chain structure and conformation, size of macromolecules, polydispersity, molecular weight of polymers, stereochemistry of repeating units (chiral centres and tacticity) and interactions between polymer chains. Chemical and physical methods determining microstructure and molecular weight. Supermolecular structure of polymers in the condensed state; macrogeles, the amorphous and crystalline state. Morphology of polymers. Theories of crystallisation kinetics. Polyalloys, blends and composites. Properties of polymers in relation to their structure

In the frame of Laboratory Training students have a possibility to analyse practically various polyreactions like free radicals polymerisation, polycondensation and polyaddition. They analyse behaviour of polymers in a solution, analyse the molecular weight and crystallinity by X-ray diffraction (WAXS) and thermal (DSC) methods as well as analyse the polymers by IR spectroscopy.

Introductory courses and the required pre-knowledge:

-Fundamental knowledge of physics and physical chemistry

Courses form and teaching methods:

-During the lectures are used transparencies with diagrams and of structural models of polymers. In laboratory the students realize experiments on special apparatus

Form and terms of complete the course - requirements and assessment methods:

-Written tests and oral examination

Basic Bibliography:

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Additional Bibliography:

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