



COURSE DATASHEET

Semester:	2012/13/2
Course:	Chemistry and physics of polymers
Code:	VEMKOK4112P
Responsible department:	Department of Organic Chemistry
Department code:	MKOK
Responsible instructor:	dr. József Kaizer

Course objectives:

Educational Objectives: Preparation, characterization, physical and mechanical properties, and structure-property relations of polymers.

Course content:

Contents: Week: 1. Historical Background, Birth of a concept 2. Classification, Nomenclature 3. Average molar masses and distributions, Size and shape 4. Polymerization reactions 5. Step-growth polymerization (Carothers equation, Ring formation) 6. Step-growth polymerization (Kinetics) 7. Addition (chain) polymerization 8. Free radical addition (chain) polymerization (Initiators, chain growth, termination, kinetics) 9. Polymerization processes 10. Ionic polymerization, Kationic polymerization (Propagation, Termination, General kinetic scheme) 11. Anionic polymerization (Living polymers, Kinetics and molar mass distribution in living systems) 12. Kationic and anionic ring opening polymerization 13. Polymer stereochemistry, Ziegler Natta catalyst (Nature of the catalyst, Mechanisms) 14. Metathesis 15. Copolymerization

Requirements, evaluation and grading:

Examination Requirements and Questions: The written test for the students involves the main areas of basic polymer chemistry such as preparation, characterization, physical and mechanical properties, and culminates in a coverage of structure-property relations. The student has to reach a 50% result to get passed the course. The individual questions can be viewed on previous exam sheets. On every occasion new questions are posed.

Required and recommended readings:

1. R.J. Hunter, Foundations of Colloid Science Vol. 1., Oxford University Press: New York, 1989. 2. Varga József : Makromolekulák kémiája, Tankönyvkiadó, Budapest 1990. 3. Varga József, Műanyagok fizikája, Tankönyvkiadó Budapest 1984.