UNIVERSITY OF PANNONIA

SUBJECT DATASHEET

Semester:	2009/10/1
Subject:	Silicate Chemistry III.
Code:	VEMKSI5312K
Responsible department:	Institute of Materials Engineering
Responsible department code:	MKSI
Responsible lecturer:	dr. Margit Enisznè Bódogh

Educational objectives:

Introduction the structure, physical and chemical properties of the glasses

Detailed content of the subject:

Characterization of noncrystalline (glassy) solids Freezing of melt to a vitreous solid Theories of glass structure Phase separation, immiscibility in glasses, Thermodynamic of phase separation Crystallization, nucleation, crystal growth, controlled crystallization Kinetics of crystallization Glass-ceramics Characterization and experimental investigations of physical properties of glasses, correlation between the physical properties and chemical composition of glasses Measurement of viscosity, thermal expansion and density Characterization and measurement of heat and electrical conductivity, specific heat Surface tension, dependence of viscosity and surface tension on chemical composition and temperature Characterization of mechanical properties (strength, hardness, strains) of glasses Strengthening methods Dependence of chemical resistance on the chemical composition and temperature Optical properties

Requirements:

Mandatory attendance of the lectures, grading is based on a written examination, offer for mark: writing and oral presentation of an essay in a given topic during the semester

Required and suggested references:

Vogel, W.: Glaschemie, Springer-Verlag Berlin, 1992 Scholze, H.: Glas, Springer-Verlag Berlin, 1988 Simmons, J.H., Uhlmann, D.R., Beall, G.H.: Nucleation and Crystallization in Glasses, The American Ceramic Society, Columbus, Ohio, 1982 Rawson, H.: Properties and Application of Glass, Elsevier Sci. Publ. Comp. Amsterdam, 1980 Doremus, R.H.: Glass Science, John Wiley and Sons, New York, 1973 Zarzycki, J.: Glasses and the Vitreous State, Cambridge Univ. Press, Cambridge, 1991