



## COURSE DATASHEET

<b>Semester:</b>	2015/16/2
<b>Course:</b>	Solid State Chemistry I.
<b>Code:</b>	VEMKSIB212T
<b>Responsible department:</b>	Institute of Materials Engineering
<b>Department code:</b>	MKSI
<b>Responsible instructor:</b>	dr. Margit Eniszné Bódogh

---

### Course objectives:

Introduction the theory of the most important chemical and physical processes taking place in silicate technologies; attaining of the necessary empirical materials knowledge

### Course content:

What is solid state chemistry? The history and fields of solid state chemistry The structure of inorganic solids, the structure of crystalline materials Characterization of ionic crystals and amorphous and glassy structures Solid state reactions Diffusion processes in ionic crystals, types of crystal defects Sintering of compacted powders and single crystals Grain growth, polymorphism, solid solutions Solid state chemical reactions Solid state reactions in the presence of melting phase Crystallization, homogeneous and heterogeneous nucleation Liquid immiscibility, compound formation and decomposition Determination of the direction of solid state reactions founded on thermodynamic consideration Physical and chemical processes in ceramic materials during the heat treatment, effect of melting phase Types of melting

### Requirements, evaluation and grading:

Mandatory attendance of the lectures, the solution of two midterm tests with a score of 2 or above, grading is based on a written examination

### Required and recommended readings:

W. Schatt, H. Worch: Werkstoffwissenschaft, Deutscher Verlag für Grundstoffindustrie, Stuttgart, 1996 R.W. Cahn, P. Haasen, E.J. Kramer: Materials Science and Technology, Vol. 5. VCH, Weinheim, 1991 R.J. Brook: Concise Encyclopedia of Advanced Ceramic Materials, Pergamon Press, 1991