



SUBJECT DATASHEET

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| Semester: | 2009/10/1 |
| Subject: | Silicate Chemistry II. |
| Code: | VEMKSI5312I |
| Responsible department: | Institute of Materials Engineering |
| Responsible department code: | MKSI |
| Responsible lecturer: | dr. Margit Eniszné Bódogh |

Educational objectives:

Correlation between the structure and physical properties of the crystalline silicates, introduction to the phase equilibrium of the most important silicate systems

Detailed content of the subject:

Characterization of the structure of the crystalline silicates Classification of silicates (Liebau's, Strunz's, Kostov's and Zoltai's classifications) Structure and physical properties of neso-, soro- and cyclosilicates The structure and physical properties of ino- and phyllosilicates (diopside, enstatite, mullite) Structure and classification of clay minerals, thermal decomposition of clay minerals. Structure and physical properties of tectosilicates Correlation between the structure and thermal, mechanical, electrical, magnetic, optical and chemical properties of polycrystalline silicates Sintering, Solid state reactions Determination of the direction of solid state reactions founded on thermodynamic consideration Melting and crystallization, Phase diagrams of the one-component systems, Fenner-diagram Phase diagrams of the binary systems, congruent and incongruent melting compounds, determination of quantitative phase composition Formation and decomposition of compounds in solid state, binary systems with polymorphic phase transformations, phase separation of melts, solid solutions, important binary systems in silicate industry Phase diagrams of ternary systems, eutectic system, ternary systems with congruent or/and incongruent melting binary and ternary compounds Determination of quantitative phase composition in ternary systems Interpretation of ternary phase diagrams of practical importance, industrial products of the different systems

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:

Tamás F., Pál I.: Fázisdiagramok anaglif ábrázolása, Műszaki Könyvkiadó, Budapest, 1964. Juhász A. Z.: Bevezetés a szilikátkémiai technológiába I., Veszprém, 1985. Nemez E.: Agyagásványok, Akadémiai Kiadó, Budapest, 1973. Smith, W.F.: Foundations of Materials Science and Engineering, McGraw-Hill, Inc., 1993. Flinn, R.A., Trojan, P.K.: Engineering Materials, Houghton Mifflin Company, 1990.