

PHD STUDIES COURSE UNIT DESCRIPTION

Name of subject	Field of science, code	Faculty / Center	Department
Solid State Reactions	Chemistry N 003	Faculty of Chemistry and Geosciences, Institute of chemistry	Department of Inorganic Chemistry
Student's workload	Credits	Student's workload	Credits
Lectures		Consultations	
Independent study	7	Seminars	

Course annotation

Solid state reactions; thermodynamics; methods of thermodynamics investigation; electrochemical methods; heterogeneous equilibrium method; thermochemical methods; methods of investigation of mechanisms; diffusion annealing method; kinetics of reactions between metal oxides; fundamentals of kinetics as well as techniques for material characterization: thermal analysis (theory and applications, techniques, interpretation of TG and DTA curves, differential thermal analysis and scanning calorimetry, thermooptics, thermomechanics, thermodilatometry, evolved gas analysis) and investigation of solid state reactions using XRD and SEM methods.

Reading list

- 1.A. R. West. Solid State Chemistry and its Applications. John Wiley and Sons, New York, 1995.
- 2.A Guide to Materials Characterization and Chemical Analysis / Ed. by John P. Sibilis. VCH Publishers, Inc., New York, 1988.
- 3.A. R. West. Basic Solid State Chemistry. John Wiley and Sons, New York, 1997.
- E.A. Moore, L.E. Smart. Solid State Chemistry. An Introduction. CRC Press, 2020.

The names of consulting teachers	Science degree	Main scientific works published in a scientific field in last 5 year period
Aivaras Kareiva	Habil. Dr.	<ol style="list-style-type: none"> 1. L. Sinusaite, A. Popov, E. Raudonyte-Svirbutaviciene, J. C. Yang, A. Kareiva and A. Zarkov. Effect of Mn doping on hydrolysis of low-temperature synthesized metastable alpha-tricalcium phosphate. <i>Ceramics Int.</i> 47 (2021) 12078-12083. 2. A. Laurikenas, D. Sakalauskas, A. Marsalka, R. Raudonis, A. Antuzevics, V. Balevicius, A. Zarkov, A. Kareiva. Investigation of lanthanum substitution effects in yttrium aluminium garnet: Importance of solid state NMR and EPR methods. <i>J. Sol-Gel. Sci. Technol.</i>, 97 (2021) 479-487. 3. L. Sinusaite, A. Kareiva and A. Zarkov. Thermally induced crystallization and phase evolution of amorphous calcium phosphate substituted with divalent cations having different size. <i>Crystal Growth & Design.</i> 21 (2021) 1242-1248. 4. D. Karoblis, A. Zarkov, E. Garskaite, K. Mazeika, D. Baltrunas, G. Niaura, A. Beganskiene, A. Kareiva. Study of gadolinium substitution effects in hexagonal yttrium manganite YMnO₃. <i>Scientific Reports.</i> 11 (2021) 2875. 5. A. Čiuladienė and A. Kareiva. Application of red paint data library for the characterization of the manuscript from Grand Duchy of Lithuania. <i>Microchem. J.</i>, 164 (2021) 105961. 6. R. Diliautas, A. Beganskiene, D. Karoblis, K. Mazeika, D. Baltrunas, A. Zarkov, R. Raudonis and A. Kareiva. Reinspection of formation of BiFe_{1-x}Mn_xO₃ solid solutions via low temperature sol-gel synthesis route <i>Solid State Sci.</i>, 111 (2021) 106458.

Certified during Doctoral Committee session on September 28th, 2021. Protocol No. 610000-KT-142.

Committee Chairman prof. habil. dr. Aivaras Kareiva