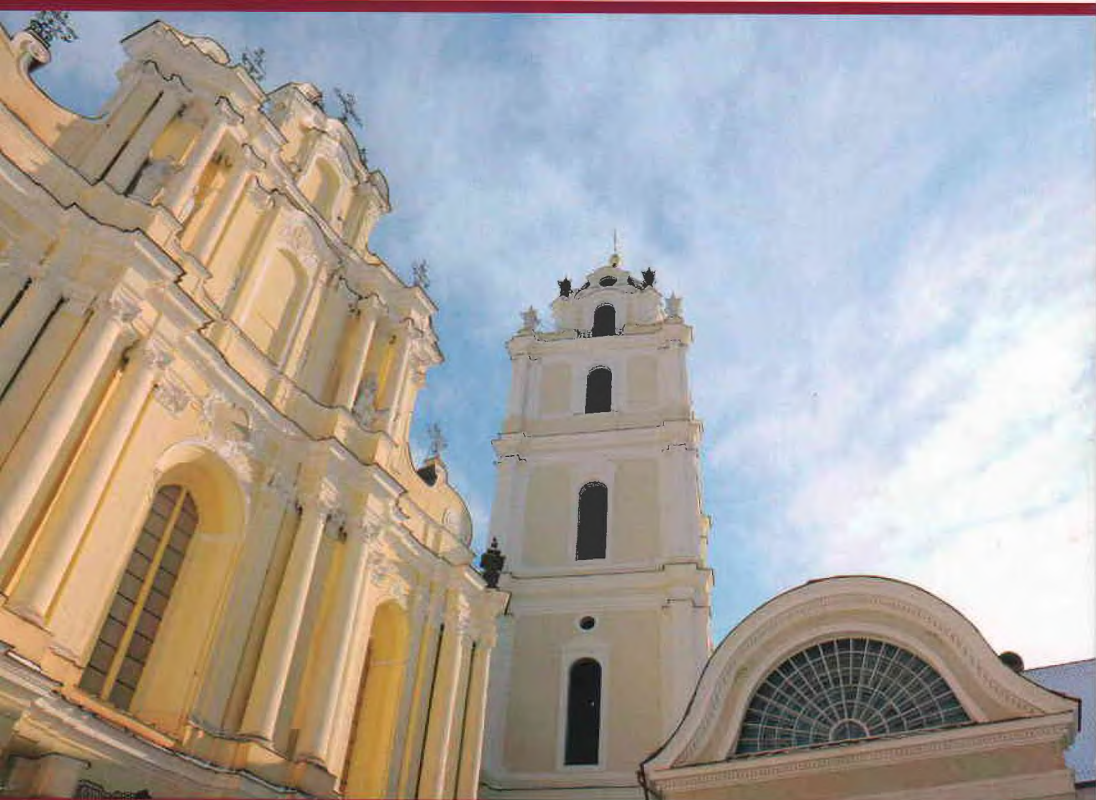


S E M I N A R

**NEW MULTIFEROICS
AND SUPERIONIC
CONDUCTORS
FOR ACUSTOELECTRONICS
AND SOLID STATE IONICS**

PROGRAM AND BOOK OF ABSTRACTS



10 OCTOBER 2017

VILNIUS / LITHUANIA

PROGRAM

(NFTMC, Saulėtekio av. 3)

- 10:00–10:10 Opening remarks (prof. J. Banys)
- 10:10–10:30 R. Yevych, M. Medulych, I. Zamaraite, A. Dziaugys, J. Banys, **Yulian Vysochanskii**
Nonlinear dynamics of phosphorous chalcogenide ferroelectrics with many-well local potentials
- 10:30–10:50 **Andrius Džiaugys**, M. Chyasnovichyus, A. Belianinov, Q. He, A. Borisevich, A. N. Morozovska, E. A. Eliseev, J. Banys, Y. Vysochanskii, S.V. Kalinin, P. Maksymovych
Polarization domains in the layered ferroelectrics $\text{CuInP}_2(\text{S,Se})_6$
- 10:50–11:20 **Edvardas Kazakevičius**, V. Venckutė, S. Kazlauskas, A. Kežionis, R. Korobko, T. Šalkus
High frequency impedance spectroscopy study on Gd-DOPED CeO_2 thin films
- 11:20–12:00 *Coffee break*
- 12:00–12:20 **Ihor Studenyak**, M. Luchynets, V. Izai, A. Pogodin, O. Kokhan, A. Kežionis, T. Šalkus, J. Banys
Phase transitions in $\text{Cu}_6\text{PS}_5\text{Br-Cu}_7\text{PS}_6$ mixed crystals
- 12:20–12:40 I. Anusca, S. Balčiūnas, P. Gemeiner, Š. Svirskas, M. Sanlialp, G. Lackner, C. Fettkenhauer, J. Belovickis, V. Samulionis, M. Ivanov, B. Dkhil, **Jūras Banys**, V. V. Shvartsman, D. C. Lupascu
Dielectric Response of the Methylammonium Lead Halide Solar Cell Absorbers
- 12:40–13:00 **Saulius Kazlauskas**, E. Kazakevičius, A. Kežionis
Electrical properties of scandia- and ceria-stabilized zirconia ceramics
- 13:00–14:00 *Lunch*
- 14:00–14:20 **Alexander Grabar**, M. V. Tsyhyka, and I. M. Stoika
Dynamic interferometry using Sb-doped $\text{Sn}_2\text{P}_2\text{S}_6$ photorefractive crystals
- 14:20–14:40 **Ilona Zamaraite**, A. Dziaugys, J. Banys, Yu. Vysochanskii
Investigation of physical properties of phosphorous chalcogenide crystals
- 14:40–15:10 *Coffee break*

15:10-17:00 Poster session

17:00 *Dinner*

POSTER
PRESENTATIONS

ELECTRICAL STUDIES OF $\text{Cu}_6\text{PS}_5\text{I}$ -BASED THIN FILMS WITH VARIOUS CONTENT OF COPPER

Vitalii Izai¹, Andrii Bendak¹, Viktor Studenyak¹, Mykola Vizenko¹,
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$\text{Cu}_6\text{PS}_5\text{I}$ crystals belong to large family of argyrodite compounds and are well known as superionic conductors [1]. In present work we present the results of electric conductivity studies of $\text{Cu}_6\text{PS}_5\text{I}$ based thin films with various copper content obtained by co-deposition technique from two tilted magnetrons – one equipped with $\text{Cu}_6\text{PS}_5\text{I}$ target (pressed powder) and second with pure Cu target. The deposition was performed onto silica glass substrates at room temperature in Ar atmosphere. The chemical composition of deposited films was studied using EDX technique. The XRD and SEM studies showed the films to be amorphous uniform quasi-two-dimensional structures with several non-uniformities observed on the surface of highly copper-enriched samples.

The electric conductivity of $\text{Cu}_6\text{PS}_5\text{I}$ -based thin films at room temperature was studied using 2-electrode method with 1 kHz AC voltage applied. The electric conductivity monotonically increases with copper content increase but two different regions can be observed on the compositional dependence (Fig. 1). The slight increase of electric conductivity in the range of copper concentration 41–58 %_{at.} changes with rapid increase of conductivity at concentrations higher than 60%_{at.} This phenomenon can be explained by large amount of vacancies in copper cationic sublattice filled with copper content increase up to 60%_{at.} At higher copper content the atoms of Cu are introduced into the interstitial positions leading to a rapid increase of conductivity enhanced by copper metal conductivity.

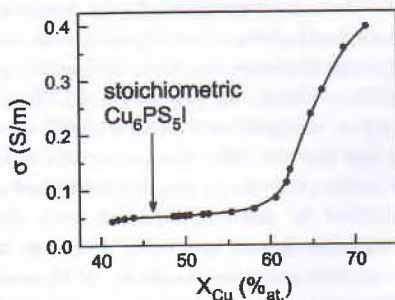


Fig.1 Compositional dependence of electric conductivity for $\text{Cu}_6\text{PS}_5\text{I}$ -based thin films with various copper content.

References

- [1] Kuhs W. F., Nitsche R., Scheunemann K.,
Acta Cryst. **B34**, 64–70 (1978).

Acknowledgement

This work was financially supported by the Research Council of Lithuania (project No. TAP-LU-15-005).