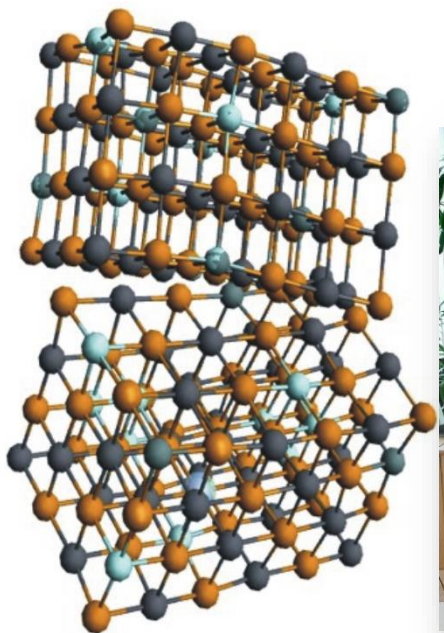




Vasyl Stefanyk Precarpathian National University
Physical-Technical Faculty

Physics and Chemistry of Solids Department

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Physics and Chemistry of Solids Department

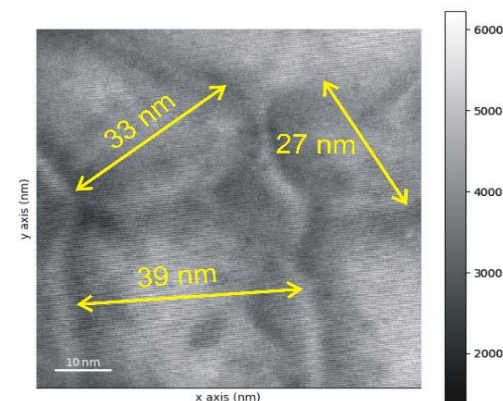
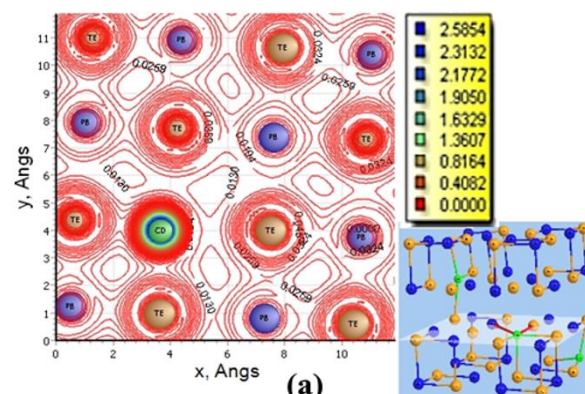
Research areas

Semiconductor material science: IV-VI based bulk materials

Thermoelectricity

List of the last projects:

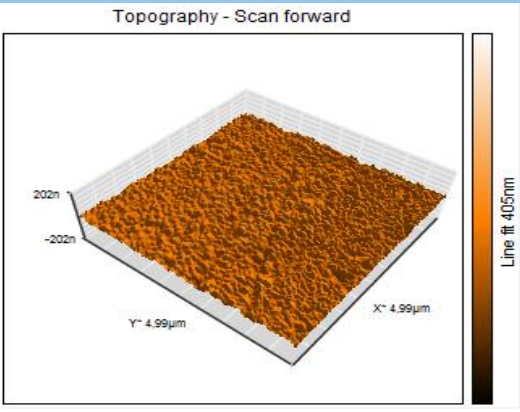
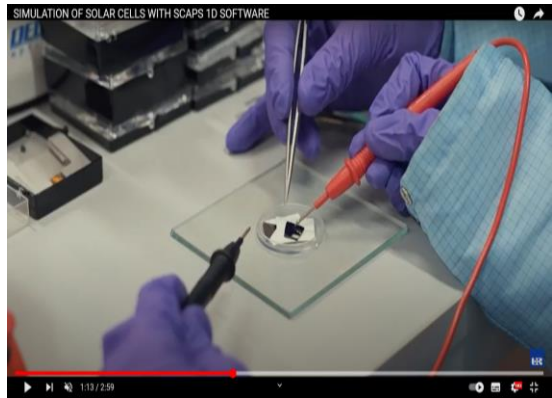
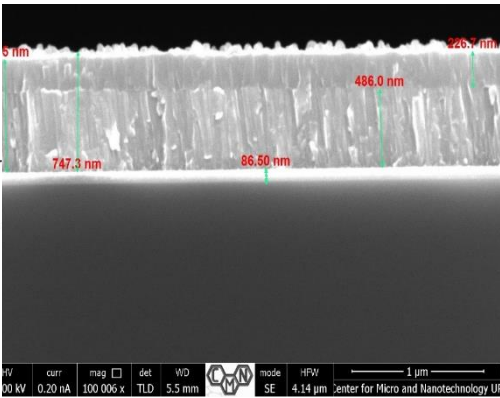
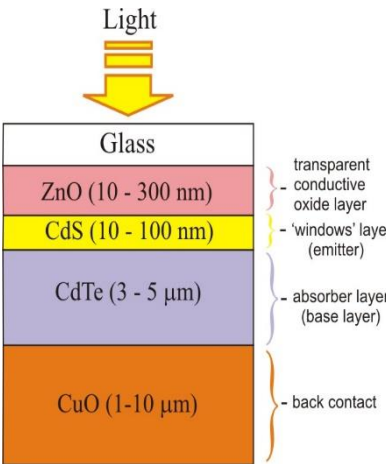
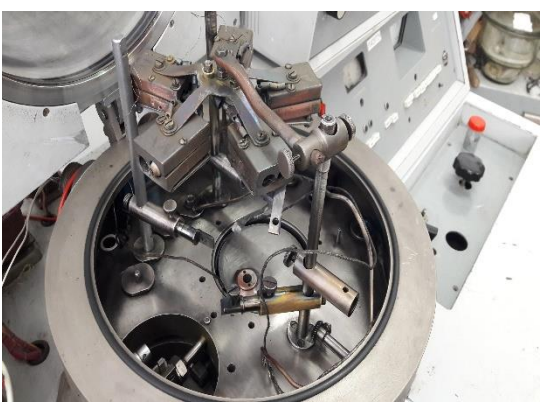
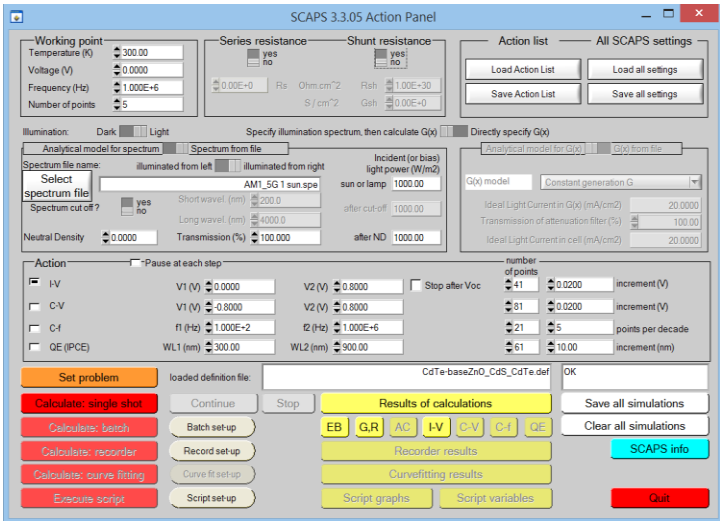
- Thermoelectric materials and devices for energy saving and security increasing (NATO SPS project; 259 000 Euro).
- Synthesis and thermoelectric properties of nanostructured materials based on Pb(Sn)-Cd(Zn)-Te solid solutions (project MES of Ukraine).
- New composite and thin film materials based on multicomponent compounds Ag-Pb-Sb-Te (LAST): technology, properties, and application (project MES of Ukraine).
- Engineering of high-efficiency thermoelectric materials and creation on their base the thin-film microgenerator for medicine and defense application (project MES of Ukraine for young researchers).



Photovoltaic; Thermoelectricity

List of the last projects:

- Technology and computer modeling of optimized second-generation photovoltaic systems based on compounds II-VI (project MES of Ukraine);
- Development of the technology of thin-film thermoelectric microconverters based on multicomponent compounds with quantum-dimensional effects (project MES of Ukraine);
- Thermal and electronic dynamics in low-dimensional systems based on Pb(Sn)-Ag-Sb-Te compounds for high-power thermoelectric microgenerators (project MES of Ukraine).



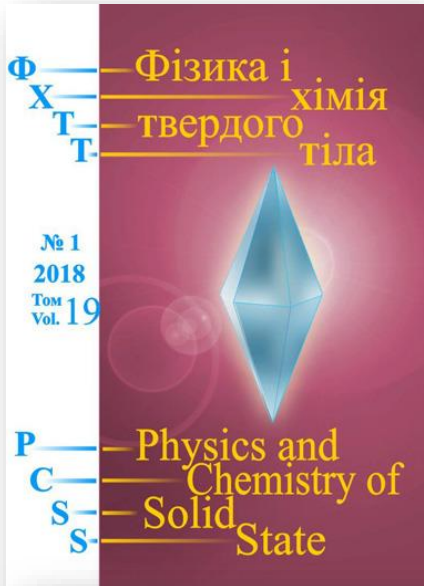
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List of last publications

1. Feasibility of high performance in p-type $\text{Ge}_{1-x}\text{Bi}_x\text{Te}$ materials for thermoelectric modules. Journal of the American Ceramic Society, (2022), <https://doi.org/10.1111/jace.18371>.
2. $\text{TiO}_2/\text{CuO}/\text{Cu}_2\text{O}$ Photovoltaic Nanostructures Prepared by DC Reactive Magnetron Sputtering. Nanomaterials, (2022), <https://doi.org/10.3390/nano12081328>.
3. Highly efficient bismuth telluride-based thermoelectric microconverters. Materials Today Energy, (2021), <https://doi.org/10.1016/j.mtener.2021.100753>.
4. Structural and Thermodynamic Properties of Pb-Cd-Te Thin Films: Experimental Study and DFT Analysis. Journal of Electronic Materials, (2021); <https://doi.org/10.1007/s11664-020-08561-5>.
5. Insight into the transport properties and enhanced thermoelectric performance of n-type $\text{Pb}_{1-x}\text{Sb}_x\text{Te}$. Journal of Alloys and Compounds, (2021), <https://doi.org/10.1016/j.jallcom.2020.158355>.
6. High thermoelectric performance of p-type $\text{Bi}_{0.5}\text{Sb}_{1.5}\text{Te}_3$ films on flexible substrate. Materials Chemistry and Physics, (2020), <https://doi.org/10.1016/j.matchemphys.2020.123427>.
7. Review of the development of copper oxides with titanium dioxide thin film solar cells. AIP Advances, (2020), <https://doi.org/10.1063/1.5125433>.
8. Point defects in PbCdTe solid solutions. Journal of Applied Physics, (2020), <https://doi.org/10.1063/1.5130747>.
9. Transport and thermoelectric performance of n-type PbTe films. Physica B: Condensed Matter, (2020), <https://doi.org/10.1016/j.physb.2020.412178>.
10. Simulation of TiO_2/CuO solar cells with SCAPS-1D software. Materials Research Express, (2019), <https://doi.org/10.1088/2053-1591/ab22aa>.
11. Evaluation of CdS/CdTe thin film solar cells: SCAPS thickness simulation and analysis of optical properties. Optical Materials, (2019), <https://doi.org/10.1016/j.optmat.2019.04.029>.
12. Low-Dimensional Systems on the Base of PbSnAgTe (LATT) Compounds for Thermoelectric Application. Physica E: Low-dimensional Systems and Nanostructures, (2019). <https://doi.org/10.1016/j.physe.2018.10.020>.

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Activities: PCSS Scientific Journal Publishing & Conference Organizing



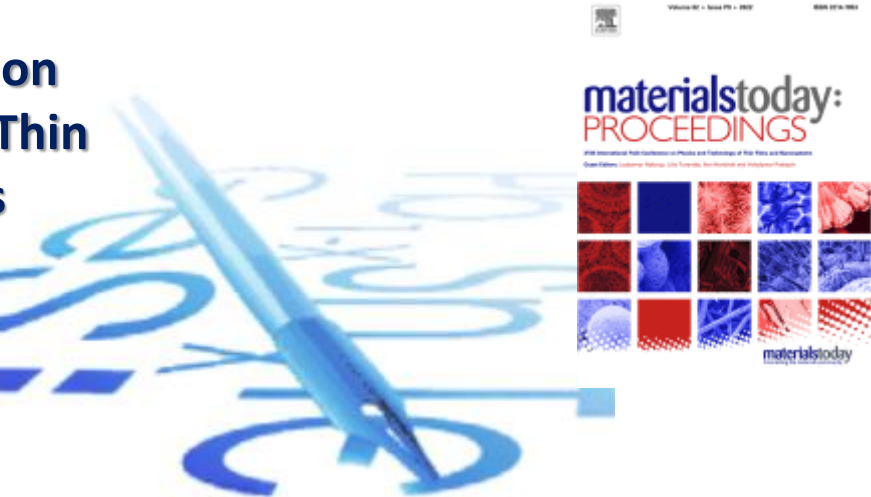
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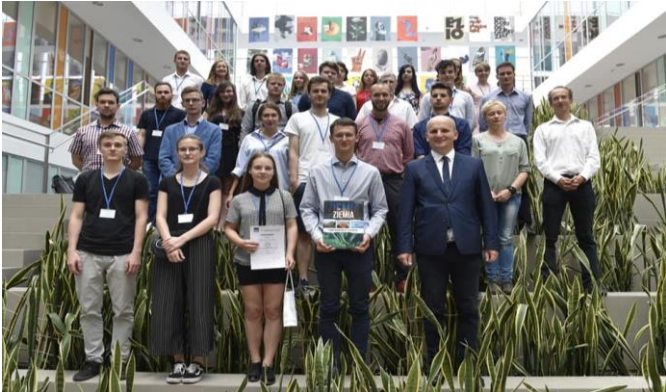
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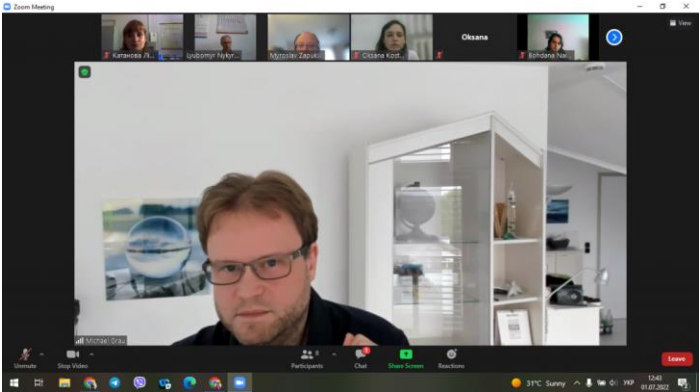
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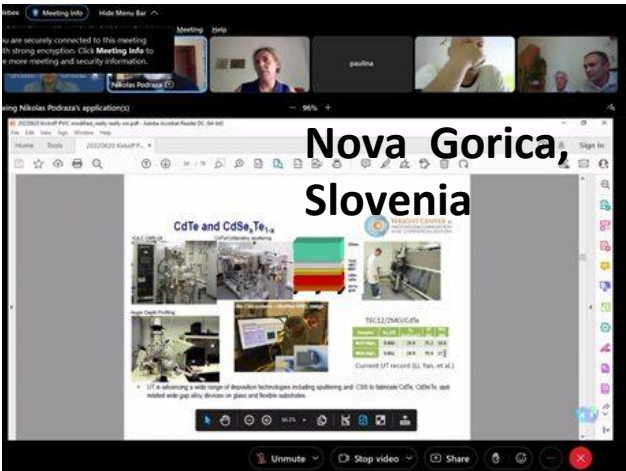
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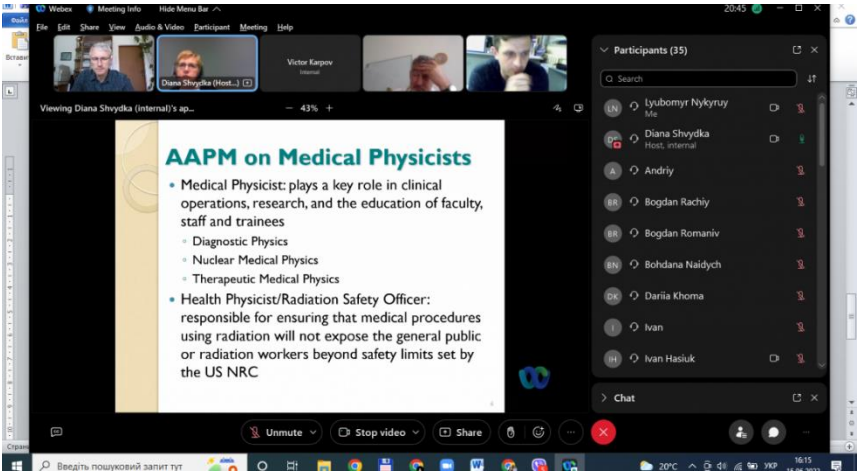
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