

	<p>ROMANOV, Aleksei E.          Doctor of Science (Institute of Strength Physics and Materials Science of Siberian Branch Russian Academy of Sciences, 1989)</p>
<p>Research interests</p>	<ul style="list-style-type: none"> <li>✓ Micro- and nanomechanics of disclinations in solids</li> <li>✓ Mesoscopic models of plastic deformation and fracture</li> <li>✓ Physical and mechanical properties of amorphous, nanostructured and nanocomposite materials</li> <li>✓ Micro- and nanomechanics of dislocation defects in thin film materials of electronics and optoelectronics</li> <li>✓ Theoretical foundations of modern optoelectronic devices</li> </ul>
<p>Features of the PhD program</p>	<p>Interactions with research centers in Changchun University of Science and Technology (CUST, China)</p>
<p>List of the supervisor's research projects (participation/supervision)</p>	<ul style="list-style-type: none"> <li>✓ Theory of structural defects in nanoobjects and nanomaterials, grant № 19-19-00617, Russian Science Foundation (supervision)</li> <li>✓ Investigation of fundamental processes of generation and detection of single photons, project № 2019-1442, Ministry of Science and Higher Education of the Russian Federation (participation)</li> <li>✓ X-ray synchrotron and laser research methods in materials science, project № 075-15-2021-1349, Ministry of Science and Higher Education of the Russian Federation (supervision)</li> </ul>
<p>List of potential thesis topics</p>	<ul style="list-style-type: none"> <li>✓ Micro- and nanomechanics in solids</li> <li>✓ Theory of defects in functional materials</li> <li>✓ Dislocations in wide bandgap semiconductors</li> <li>✓ Modeling of electronic and optoelectronic devices</li> <li>✓ Computer materials science</li> </ul>
<p>Publications in the last five years</p>	<p>75 (Scopus / Web of Science / RSCI)</p>
<p>Key publications</p>	<ol style="list-style-type: none"> <li>1. Smirnov A.M., Kremleva A.V., Ivanov A.Y., Myasoedov A.V., Sokura L.A., Kirilenko D.A., Sharofidinov S.S., Romanov A.E. Stress–strain state and piezoelectric polarization in orthorhombic Ga<sub>2</sub>O<sub>3</sub> thin films depending on growth orientation//Materials and Design, 2023, Vol. 226, pp. 111616</li> <li>2. Rozhkov M.A., Abramenko N.D., Smirnov A.M., Kolesnikova A.N., Romanov A.E. Modelling of disclinated phosphorene crystals//Письма о материалах [Letters on Materials], 2023, Vol. 13, No. 1(49), pp. 45-49</li> <li>3. Sosnin I.M., Sokura L.A., Dorogov M.V., Smirnova I.G., Romanov A.E. Aqueous solution synthesis and size control of acid-resistant beta-Ga<sub>2</sub>O<sub>3</sub> microparticles//Materials Letters, 2023, Vol. 335, pp. 133758</li> </ol>

	<p>4. Bauman D.A., Panov D., Spiridonov V., Kremleva A.V., Asach A.V., Tambulatova E., Sakharov A.V., Romanov A.E. High quality beta-Ga<sub>2</sub>O<sub>3</sub> bulk crystals, grown by edge-defined film-fed growth method: Growth features, structural, and thermal properties//Journal of Vacuum Science and Technology A, 2023, Vol. 41, No. 5, pp. 053203</p> <p>5. Romanov A.E., Kolesnikova A., Gutkin M.Y. Internal Stresses and Structural Defects in Nanowires//Mechanics of Solids, 2022, Vol. 57, No. 8, pp. 1987-2004</p>
Key IPs	<p>1. Semiconductor substrate, semiconductor device and method of manufacturing a semiconductor substrate, M.A. Odnoblyudov, V.E. Bougrov, A.E. Romanov, T. Lang, Russian Federation patent RU2368030, priority 14.12.2004, granted 20.09.2009</p> <p>1.1. Semiconductor substrate, semiconductor device and method of manufacturing a semiconductor substrate, M.A. Odnoblyudov, V.E. Bougrov, A.E. Romanov, T. Lang, China patent ZL 2005 8 0042970.7, priority 19.05.2005, granted 13.05.2009</p> <p>1.2. Semiconductor substrate, semiconductor device and method of manufacturing a semiconductor substrate, M.A. Odnoblyudov, V.E. Bougrov, A.E. Romanov, T. Lang, Hong Kong patent HK1111264, priority 19.05.2005, granted 31.12.2009</p> <p>1.3. Semiconductor substrate, semiconductor device and method of manufacturing a semiconductor substrate, M.A. Odnoblyudov, V.E. Bougrov, A.E. Romanov, T. Lang, R Korea patent № 10-1159156, priority 19.05.2005, granted 18.06.2012</p> <p>2. A method for reducing internal mechanical stresses in a semiconductor structure and a low mechanical stress semiconductor structure, M.A. Odnoblyudov, V.E. Bougrov, A.E. Romanov, Patent of Finland 20095937 No 123319, priority 10.09.2009, granted 28.02.2013</p> <p>3. A heat sink module for led light sources, E.V. Gubernatorov, I.N. Ivukin, V.E. Bougrov, A.R. Kovsh, M.A. Odnoblyudov, A.E. Romanov, Russian Federation utility model patent 2013146214, priority 17.10.2013, granted 14.03.2014</p> <p>4. Device for growing profiled β-Ga<sub>2</sub>O<sub>3</sub> monocrystals, V/I/ Nikolaev, V.M. Krymov, V.N. Maslov, V.E. Bougrov, A.E. Romanov, P.S. Shirshnev, Russian Federation utility model patent 2016134366, priority 22.08.2016, granted 18.04.2017</p> <p>5. Transparent conductive oxide, T.G. Lyashenro, E.V. Shirshneva-Vaschenko, V.E. Bougrov, A.E. Romanov, P.S. Shirshnev, Russian Federation patent 2017146493, priority 27.12.2017, granted 30.10.2018</p>
Supervisor's specific requirements	Solid mathematical background
Code of the subject area of the PhD program	<p>1.1.8 Mechanics of Deformable Solids</p> <p>1.3.8 Condensed State Physics</p> <p>1.3.11 Semiconductor Physics</p> <p>2.2.6 Optical and Opto-Electronic Devices and Complexes</p> <p>2.6.1 Metallurgy and Heat Treatment of Metals and Alloys</p>

