


Researcher profile (portfolio) form for potential research supervisors of postgraduate track participants in the Global Universities Association International Olympiad for graduate and postgraduate applicants 2023-2024.

University	Tomsk Polytechnic University
Level of English proficiency	C1
Educational program and field of the educational program for which the applicant will be accepted	Condensed matter physics
List of research projects of the potential supervisor (participation/leadership)	Development of scientific and technical bases for the formation of chromium coatings on the E110 zirconium alloy, including welded joints, for the manufacture of accident-resistant components of the core of nuclear reactors Hydrogenation by the method of absorption of gaseous hydrogen of samples of pipes from zirconium alloys E110 Purification, compression and storage of hydrogen
List of the topics offered for the prospective scientific research	Development of new metal hydride and nanometal composites for hydrogen purification and storage
 <p>Research supervisor: Viktor N. Kudiyarov, Candidate of Science, Tomsk Polytechnic University</p>	<p>Global Map of Science: Natural and exact sciences 1.03. Physics and Astronomy, Physics – Interdisciplinary</p>
	<p>Supervisor's research interests <i>Development of new materials for hydrogen compression, purification, storage</i> <i>Development of protective coatings to increase the resistance of materials to hydrogen</i></p>
	<p>Research highlights (<i>при наличии</i>) Unique equipment in the field of studying the interaction of hydrogen with materials Practice-oriented training with the implementation of real projects Opportunity to take part in work on grants and contracts with enterprises</p>
	<p>Supervisor's specific requirements:</p> <ul style="list-style-type: none"> • <i>Knowledge of the basics of materials science</i> • <i>Knowledge of English is not worse than level B1</i>
	<p>Supervisor's main publications (specify a total number of publications in journals indexed by Web of Science, Scopus, RSCI for the last 5 years – 33, list up to 5 most significant publications with the publication details): Kudiyarov V.N., Lyu J., Semyonov O.V., Lider A.M., Chaemchuen S., Verpoort F. Prospects of hybrid materials composed of MOFs and hydride-forming metal nanoparticles for light-duty vehicle hydrogen storage // <i>Applied Materials Today</i>. – 2021 – Vol. 25, Article Number 101208. – p. 1-19. Kudiyarov V.N., Elman R.R., Kurdyumov N. The effect of high-energy ball milling conditions on microstructure and hydrogen desorption properties of magnesium hydride and single-walled carbon nanotubes with iron nanoparticles // <i>Metals</i>. – 2021 – Vol. 11 – №. 9, Article number 1409. – p. 1-14. Kudiyarov V.N., Sakvin I., Syrtanov M.S., Slesarenko I.V., Lider A.M. Hydride rim formation in E110 zirconium alloy during gas-phase hydrogenation // <i>Metals</i>. – 2020 – Vol. 10 – №. 2, Article number 247. – p. 1-10.</p>

	<p>Bordulev I., Kudiiarov V., Svyatkin L., Syrtanov M., Stepanova E., Čížek J., Lider A.. Positron annihilation spectroscopy study of defects in hydrogen loaded Zr-1Nb alloy //Journal of Alloys and Compounds. – 2019. – T. 798. – C. 685-694.</p> <p>Baturin A., Lotkov A., Grishkov V., Rodionov I., Kudiiarov V. Effect of hydrogen redistribution during aging on the structure and phase state of nanocrystalline and coarse-grained TiNi alloys //Journal of Alloys and Compounds. – 2018. – T. 751. – C. 359-363.</p>
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