

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

University	National research Tomsk Polytechnic University
English language proficiency	B2.1 (Upper-Intermediate)
Applicant's postgraduate program	Earth Science. Geoecology
List of research projects of a potential research supervisor (participation/leadership)	<ul style="list-style-type: none"> <li>• Grant of the President of the Russian Federation for Support of Young Russian Scientists "The study of anthropogenic air pollution and risk assessment for human health in urban areas of Tomsk Oblast" (2013-2014, principal leader)</li> <li>• Grant of BP Exploration Operating Company Limited. Topic: "Assessment of environmental risk from oil and gas companies on the dwelling items according to the study of geochemistry of dust aerosols (case study in Tomsk Oblast)" (2013-2014, principal leader)</li> <li>• Contract for the performance of scientific research, creation and delivery of research products «Eco-geochemical assessment area of Sorsk ore-dressing plant on the basis of snow cover and soil (Republic of Khakassia)» (2015-2017, responsible executor)</li> <li>• Grant of Russian Foundation for Basic Research «Air pollution and risk assessment for human health in the vicinity of power plants operating on different types of fuel to improve environmental monitoring for fuel-energy sector of Tomsk Oblast» (2016-2018, executor)</li> <li>• Grant of Russian Foundation for Basic Research «Creation of system of operating and processing of eco-geochemical data to increase the efficiency of its use for assessment of pollution level and risk for human health in the areas under influence of coal mining» (2020-2022, executor)</li> <li>• Contract for the performance of scientific research, creation and delivery of research products «Environmental assessment of the area of the land with cadastral number 24:02:0703001:137 with an area of 50.2852 hectares and determination of aerosol emission transport from the alumina plant based on the analysis of the chemical composition of the snow cover» (2024, principal leader)</li> </ul>
List of possible research topics	<ul style="list-style-type: none"> <li>• Eco-geochemical assessment of urban and mining areas using snow cover</li> <li>• Geochemistry of road (street) dust in urban areas</li> <li>• The impact of industries and thermal power plants on the formation of the chemical and mineral composition of particulate matter (based on the study of snow cover)</li> <li>• Eco-geochemistry of trace elements (mercury, arsenic, bromine, radioactive or rare earth elements) in aerosols within urban areas (based on the study of particulate phase of snow cover and road dust)</li> </ul>



Research supervisor:

Anna Talovskaya,

Doctor of geological and mineralogical science (National research Tomsk Polytechnic University)

### 1.6.21 Geoecology

Supervisor's research interests (detailed description of research interests):

Geochemical environmental monitoring in urban and mining areas

Ecogeochemistry and mineralogy of particulate matter based on the study of snow cover and road (street) dust.

Geoindicators of atmospheric air changes under the impact of anthropogenic factors

Research highlights (if applicable):

It is used the unique equipment in the International Innovative Scientific and Educational Center "Uranium Geology" at the National Research Tomsk Polytechnic University: research nuclear reactor, scanning electron microscope, mercury analyzer, X-ray diffractometer.

It is used the modern methods to study chemical and mineral composition: instrumental neutron activation analysis, f-radiography method, atomic absorption spectrometry, atomic absorption analysis of "cold" vapor, scanning electron microscopy, X-ray diffraction analysis.

Collaboration with scientists from the Russian Academy of Sciences (RAS): Institute of Atmospheric Optics Siberian Branch (SB) RAS, Institute of Monitoring of Climatic and Ecological Systems SB RAS, Institute of Atmospheric Physics RAS, Institute of Mineralogy Ural RAS.

Supervisor's specific requirements:

- courses completed "Geoecology", "Geochemistry of the environment", "Ecology", "Chemistry and physics of the atmosphere", "Mineralogy", "Environmental monitoring"
- know methods of the environment impact assessment
- skills of writing scientific articles
- responsibility and diligence, the desire to develop and gain new knowledge

Основные публикации научного руководителя (указать общее количество публикаций в журналах, индексируемых Web of Science, Scopus, RSCI за последние 5 лет, написать до 5 наиболее значимых публикаций с указанием выходных данных):

- Buchelnikov, V. S. Analysis of the content of chemical elements in aerosols using data from Passive Sampling at Fonovaya Observatory / V. S. Buchelnikov, A. V. **Talovskaya**, E. G. Yazikov, D. V. Simonenkov, M. P. Tentyukov, B. D. Belan // Atmospheric and Oceanic Optics. – 2020. – V. 33. – № 5. – P. 490–495.
- **Talovskaya A.V.** Chemical composition of atmospheric particulate matter in the winter season as indicator of environment quality within urban areas / **A.V. Talovskaya**, V.D. Kirina, V.V. Litay, T.S. Shakhova, D.A. Volodina, E.G. Yazikov // Pure and Applied Chemistry. – 2022. –V. 94 (3). – № 8 – 249–256.

	<ul style="list-style-type: none"> <li>• Osipova N. A. Content of toxic elements in street dust and risk assessment for human health (Mezhdurechensk, Southern Kuzbass) / N. A. Osipova, K. Yu. Osipov, <b>A. V. Talovskaya</b>, E. G. Yazikov, E. A. Filimonenko, S. A. Novikov // Bulletin of the Tomsk Polytechnic University. Geo Assets Engineering. – 2023. – Vol. 334. – № 3. – P. 229–244.</li> <li>• Volodina D. A. Elemental composition of dust aerosols near cement plants based on the study of samples of the solid phase of the snow cover / D. A. Volodina, <b>A. V. Talovskaya</b>, A. Y. Devyatova, A. V. Edelev, E. G. Yazikov // Pure and Applied Chemistry. – 2022. – V. 94 (3). – Pp. 269-274.</li> <li>• <b>Talovskaya A.V.</b> Monitoring for elemental composition of particulate matter deposited in snow cover around coal-fired thermal power plant (Karaganda, Central Kazakhstan) / A. V. Talovskaya, T. E. Adil'bayeva, E. G. Yazikov, // Geography, Environment, Sustainability. – 2023. – V. 16(4). – Pp. 180–192</li> </ul>
	<p>Intellectual property rights (if applicable)</p> <ul style="list-style-type: none"> <li>• Method for determining the snow cover pollution of anthropogenic components: <b>Patent</b> No. 2229737 Russia, IPK7 G from 01 To 9/00 / E. G. Yazikov, A. Yu. Shatilov, <b>A.V. Talovskaya</b>; applicant and patent holder Tomsk polit. un-T. – No. 2002127851; application 17.10.2002; publ. 27.05.2004.</li> <li>• Method for determining the c of snow cover pollution of radioactive components: <b>Patent</b> No. 2453869 Russia, IPC g 01 91/169 t / E. G. Yazikov, <b>A.V. Talovskaya</b>, A. F. Sudyko, E. A. Filimonenko; applicant and patent holder Tomsk polit. un-T. – No.2011100193/28; application 11.01.2011; publ. 20.06.2012.</li> <li>• Database of Dust Load and Element Composition of Snow Insoluble Phase: <b>Certificate</b> of state registration of the database No. 2016620754 / applicant and patent holder Tomsk polit. un-t. application / E. G. Yazikov, <b>A.V. Talovskaya</b>, E. A. Filimonenko, V. V. Zhukov – No.2016620468; 04/18/2016; register. 07.06.2016.</li> <li>• Database of chemical element contents in street dust within the city of Mezhdurechensk / <b>Certificate</b> of state registration of the database 2021623276, 12/28/2021. Application No. 2021623234 dated 20.12.2021 / N. A. Osipova, K. Yu. Osipov, <b>A. V. Talovskaya</b>, E. G. Yazikov</li> </ul>