

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	Tomsk polytechnic university
Level of English proficiency	B2-C1
Educational program and field of the educational program for which the applicant will be accepted	Earth sciences 1.05. Earth sciences and related environmental sciences, Earth sciences - interdisciplinary Earth Science; Economic Geology; Ore deposits; Geology; Earth-Surface Processes; Geochemistry; Mineralogy
List of research projects of a potential research supervisor (participation/leadership)	Clay mineral nanocomposites as a novel "green" controlled release fertilizers (Head, RSF 22-77-10002); Biogeochemical cycles, metal sources and evolution of Cretaceous-Paleogene marine ironstone deposits (Performer, RSF 21-17-00019); Origin of channel ironstones: relationship of iron biogeochemical cycle with global and regional Earth processes (Head, RSF 20-77-00007); Activation of glauconite to creation of polyfunctional nanocomposite fertilizers (Head, Grant of the President of the Russian Federation MK-1825.2022.1.5); Investigation of clay minerals for eco-friendly slow-release fertilizers (Head, RFBR 19-55-45002 and Department of Science & Technology of India (Santanu Banerjee))
List of possible research topics	Supervisor's research interests (detailed description of research interests): Scientific interests are as follows: sedimentary deposits, clay minerals, ironstones, ore deposits, sedimentary basins, glauconite, mineral fertilisers, controlled release fertilisers, mineral nanocomposites
 <p>Research supervisor: Maxim A. Rudmin, Candidate of Science (Tomsk polytechnic university)</p>	<p>Research highlights (if applicable): Fundamental geological research in sedimentary ore deposits, as well as in the field of environmental issues (the creation of nanocomposite mineral fertilisers) is carried out on the basis of network with many laboratory centers of the Russian Federation and foreign groups, which contributes to obtaining independent world-class results. The analytical approach uses the following main methods: scanning electron microscopy, transmission electron microscopy with local electron diffraction analysis,</p>

	<p>differential thermal and thermogravimetric analyzes of adapted mass spectrometric detectors, inductively coupled plasma mass spectrometry (and with laser ablation), isotope mass spectrometry, infrared spectrometry, Raman spectrometry, X-ray fluorescence analysis, X-ray diffraction analysis, Rock-eval pyrolysis, field research, etc.</p> <p>Supervisor's specific requirements: This section is to be filled out if there are any requirements to a graduate student (required background/courses completed/ methods learned/ specific software knowledge and skills, etc.)</p> <ul style="list-style-type: none"> • High level of basic geological disciplines: geology, geodynamic, geochemistry, petrology, lithology, mineralogy, crystallography, geology of ore deposits, geomorphology, structural geology, etc. • Basic knowledge of laboratory methods: optical and petrographic microscopy, principles of concentration analysis, mineragraphic analysis, facies analysis, field observations, etc. • The English level is sufficient for accessible communication and writing. • Publications, as well as a presentation at scientific conferences, are welcome. • SEM, XRD, FTIR-spectroscopy and Raman microscopy methods are welcome. <p>Supervisor's main publications: My h-index is 13. My number of publications in Web of Science/Scopus is 60 for the last 5 years.</p> <ul style="list-style-type: none"> • Rudmin, M., Maximov, P., Dasi, E., Kurovsky, A., Gummer, Y., Ibraeva, K., Kutugin, V., Soktoev, B., Ponomarev, K., Tararushkin, E., Makarov, B., Ruban, A., 2023. Intercalation of carbamide to globular glauconite by chemical processing for the creation of slow-release nanocomposites. Applied Clay Science 243, 107075. https://doi.org/10.1016/J.CLAY.2023.107075 • Rudmin, M., López-Quirós, A., Banerjee, S., Ruban, A., Shaldybin, M., Bernatonis, P., Singh, P., Dauletova, A., Maximov, P., 2023. Origin of Fe-rich clay minerals in Early Devonian volcanic rocks of the Northern Minusa basin, Eastern Siberia. Applied Clay Science 241, 107014. https://doi.org/10.1016/J.CLAY.2023.107014 • Rudmin, M., et al. 2022. Origin of ooids, peloids and micro-oncoids of marine ironstone deposits in Western Siberia (Russia). Journal of Asian Earth Sciences 105361. https://doi.org/10.1016/J.JSEAES.2022.105361 • Rudmin, M., et al. 2022. A study of iron carbonates and clay minerals for understanding the origin of marine ooidal ironstone deposits. Marine and Petroleum Geology 142, 105777. https://doi.org/10.1016/J.MARPETGEO.2022.105777 • Rudmin, M., et al. 2021. Origin of Oligocene channel ironstones of Lisakovsk deposit (Turgay depression, northern Kazakhstan). Ore Geology Reviews 138, 1–16.
	<p>Intellectual property rights (if applicable) Act on the introduction of composite fertilizers in an agricultural enterprise (2022)</p>