

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	B2.2
Applicant's postgraduate program	2.6.13. Processes and devices of chemical technologies
List of research projects of a potential research supervisor (participation/leadership)	<p>1) RFBR grant "Development of fundamental principles for increasing the resource efficiency of the domestic technology for the production of linear alkylbenzene sulfonic acid - a biodegradable surfactant - based on predicting the activity of the reaction medium of chemically coupled stages of mixing and catalysis", 2018-2020 (supervisor).</p> <p>2) RSCF grant "Fundamentals of resource efficiency and mathematical models of the stages of alkylation and sulfonation of the technology for the production of synthetic detergents", 2019-2021 (Supervisor).</p> <p>3) RFBR grant "Mathematical modeling of the process of sulfonation of linear alkylbenzenes occurring in a film-type apparatus under conditions of a high-viscosity reaction medium", 2020-2022 (supervisor), 2020-2022 (supervisor)</p> <p>4) Grant of the President of the Russian Federation "Development of the fundamentals of resource-saving and environmentally friendly technologies for the alkylation of hydrocarbons" (supervisor)</p> <p>5) RSCF grant "Fundamental mathematical models of the processes of processing petroleum feedstock into high-octane gasoline and diesel fuel", 2019-2021.</p>
List of possible research topics	<ul style="list-style-type: none"> • Development of an intelligent modeling system for the production of linear alkylbenzene sulfonic acids • Development of an intelligent modeling system for the process of pyrolysis of propane-butane and gasoline fractions
	<p>Supervisor's research interests (detailed description of research interests):</p> <p>Processes of oil refining and petrochemistry, alkylation of hydrocarbons, production of synthetic detergents, multi-stage processes, non-stationary mathematical modeling, deactivation of catalysts and reaction media, thermodynamics, kinetics</p>
	<p>Research highlights (if applicable):</p> <p><i>Use of unique equipment, collaboration with foreign scientists and research centers, financial support for graduate students, etc.</i></p>
<p>Research supervisor: I.O. Dolganova, Candidate of Technical Sciences, Tomsk Polytechnic University</p>	

	<p>Supervisor's specific requirements: The candidate must have knowledge in the following disciplines:</p> <ul style="list-style-type: none"> • Mathematical modeling of chemical processes • Processes and apparatuses of chemical technologies • Organic chemistry • Informatics <p>Knowledge of programming languages (preferably <i>Python</i>) Proficiency with the following software is required: ASPEN HYSYS, UNISIM, ANSYS Willingness to learn Russian</p>
	<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, list up to 5 most significant publications with the publication details): 50</p> <ul style="list-style-type: none"> • Bunaev A. A., Dolganov I. M., Dolganova I. O. Unsteady state simulation of gasoline fraction pyrolysis // South African Journal of Chemical Engineering. - 2022 - Vol. 42. - p. 146-155. doi: 10.1016/j.sajce.2022.08.007. Mode of access: https://www.sciencedirect.com/science/article/pii/S1026918522000671 • Ivanchina, E.D., Ivashkina, E.N., Dolganova, I.O., Belinskaya, N.S. Mathematical modeling of multicomponent catalytic processes of petroleum refining and petrochemistry // Reviews in Chemical Engineering, (2021) 37 (1), pp. 163-191. (Q1, IF=5.510 https://www.degruyter.com/document/doi/10.1515/revce-2018-0038/html DOI: 10.1515/revce-2018-0038 • Ivanchina, E., Ivashkina, E., Dolganova, I., Dolganov, I., Solopova, A., Pasyukova, M. Linear Alkylbenzenes Sulfonation: Design of Film Reactor and its Influence on the Formation of Deactivating components // Journal of Surfactants and Detergents, (2020) 23 (6), pp. 1007-1015. (Q2, IF=1.654) https://aocs.onlinelibrary.wiley.com/doi/abs/10.1002/jsde.12458 DOI: 10.1002/jsde.12458 • Dolganova, I., Ivanchina, E., Dolganov, I., Ivashkina, E., Solopova, A. Modeling the multistage process of the linear alkylbenzene sulfonic acid manufacturing // Chemical Engineering Research and Design, (2019) 147, pp. 510-519. (Q2, IF=3.350) https://www.researchgate.net/publication/333384135_Modeling_the_multistage_process_of_the_linear_alkylbenzene_sulfonic_acid_manufacturing DOI: 10.1016/j.cherd.2019.05.044 • Dolganova, I., Dolganov, I., Ivanchina, E., Ivashkina, E. Alkylaromatics in Detergents Manufacture: Modeling and Optimizing Linear Alkylbenzene Sulfonation // Journal of Surfactants and Detergents, (2018), 21 (1), pp. 175-184. (Q2, IF=1.654) https://aocs.onlinelibrary.wiley.com/doi/abs/10.1002/jsde.12009 DOI: 10.1002/jsde.12009 • Dolganova, I., Ivanchina, E., Ivashkina, E., Dolganov, I. Comment on "Sulfonation of alkylbenzene using liquid sulfonating

	<p>agent in rotating packed bed: Experimental and numerical study” // Chemical Engineering and Processing: Process Intensification, (2018), 123, pp. 45-46. (Q2, IF=3.731) https://www.sciencedirect.com/science/article/abs/pii/S025527011730898X DOI: 10.1016/j.cep.2017.10.017</p>
	<p>Intellectual property rights:</p> <ul style="list-style-type: none"> • Certificate of official registration of the computer program No. 2020618870 "Compounding". Dolganov I.M., Dolganova I.O., Los E.A., 2020 • Certificate of official registration of the computer program No. 2021611094 “Determination of the group composition of heavy oil fractions by fractional composition”. Ivanchina E.D., Ivashkina E.N., Dolganov I.M., Dolganova I.O., Chuzlov V.A., Nazarova G.Yu., Arkenova S.B., Bunaev A.A., 2021 • Certificate of official registration of the computer program No. 2021664679 “Software module for calculating the sulfonation process in a film reactor, taking into account mass transfer through the phase boundary and radial diffusion”. Ivanchina E.D., Ivashkina E.N., Dolganov I.M., Dolganova I.O., Solopova A.A., Bunaev A.A., 2021 • Patent 2 799 198(13) C1 "Method of sulfonation of linear alkylbenzenes", Dolganova I.O., Dolganov I.M., Ivashkina E.N., Zykova A.A., publ. 4.07.2023