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
English language proficiency	fluent
Applicant's postgraduate program	Physics and Astronomy (Profile in Chemical Physics, Combustion and Explosion, Matters under Extreme Conditions)
List of research projects of a potential research supervisor (participation/leadership)	1. Coagulation, Breaking and Fragmentation of Liquid Droplets in Multiphase and Multicomponent Gas and Vapor Flows. RSF Grant No. 18-71-10002 2. Energy and Environmental Characteristics of Physical and Chemical Processes in the Combustion of Waste Multifuel Aerosols Studied with Optical Methods. Grant of the President of the Russian Federation No. MD-314.2019.8 3. Microdispersing of Actively Heated Inhomogeneous Droplets in Aerosol Flows as a Technique for Secondary Crushing of Fuel Emulsions and Suspensions. The Leading Research University Project No. VIU RSPh-60/2019 4. Multifuel technologies of a closed cycle for power plants and engines. Project Priority-2030-NIP/EB-038-1308-2022.
List of possible research topics	1. Development of effective fire extinguishing compositions for indoor fires. 2. Creation of fire extinguishing systems with feedback. 3. Determination of the necessary and sufficient conditions for the ignition of composite fuels in power plants of a new generation. 4. Development of composite fuels from industrial and municipal waste. 5. Creation of systems for the formation of multiphase flows for irrigation of surfaces for the purpose of their processing, cooling and painting.
 Research supervisor:	Complex heat and mass transfer during chemical reacting and phase transforming Supervisor's research interests: • heat and mass transfer, ignition, condensed substance, composite fuel, alternative sources of energy, phase transform, numerical simulation, physical experiment, heat power engineering Research highlights (if applicable): • Unique equipment for research • Collaboration with international researchers and universities • Financial support of PhD students Supervisor's specific requirements: • Basic knowledge in the field of thermophysics, heat engineering and combustion

Pavel A. Strizhak, Doctor of Sciences Tomsk Polytechnic University	Supervisor's main publications: *221 articles in the Scopus indexed journals, 80 articles in the Web of Science indexed journals over the past 5years.* • *D. V. Antonov, O. S. Gaidukova, P. A. Strizhak, Mathematical modeling the ignition of several gas hydrate particles. Fuel. 2022. Vol. 330. Article number 125564 doi: 10.1016/j.fuel.2022.125564.* • *D. V. Antonov, I. S. Voytkov, P. A. Strizhak, Behavior of child droplets during micro-explosion and puffing of suspension fuel droplets: The impact of the component mixing sequence. International Journal of Heat and Mass Transfer. 2022. Vol. 197. Article number 123371 doi: 10.1016/j.ijheatmasstransfer.2022.123371.* • *G. V. Kuznetsov, A. O. Zhdanova, R. S. Volkov, P. A. Strizhak, Optimizing firefighting agent consumption and fire suppression time in buildings by forming a fire feedback loop. Process Safety and Environmental Protection. 2022. Vol. 165. Pp. 754–775. doi: 10.1016/j.psep.2022.07.061.* • *D. V. Antonov, G. V. Kuznetsov, P. A. Strizhak, Mathematical modeling of heat transfer in a droplet of coal-water fuel leading to its fragmentation. Applied Thermal Engineering. 2022. Vol. 212. Article number 118628 doi: 10.1016/j.applthermaleng.2022.118628.* • *G. Kuznetsov, A. Zhdanova, I. Voitkov, P. Strizhak, Disintegration of Free-falling Liquid Droplets, Jets, and Arrays in Air. Microgravity Science and Technology. 2022. Vol. 34. No. 2. Article number 12 doi: 10.1007/s12217-022-09927-6.*
	Intellectual property rights (list key intellectual deliverables) 1. *Volkov R.S., Kuznetsov G.V., Strizhak P.A., Shevyrev S.A. Testing Facility for Study of Combustion Characteristics and the Combustion of Coal-Water Slurry Droplet Mixed with Petrochemicals // Patent of the Russian Federation No. 2631614.* 2. *Volkov R.S., Piskunov M.V., Strizhak P.A. Facility for Generation of Translating Liquid Droplets // Patent of the Russian Federation No. 2606090.* 3. *Volkov R.S., Kuznetsov G.V., Strizhak P.A. Method and Facility for Fire Control and Extinction // Patent of the Russian Federation No. 2616290.* 4. *Volkov R.S., Kuznetsov G.V., Strizhak P.A. Facility for Fire Extinction // Patent of the Russian Federation No. 2630653.*