Potential scientific supervisors: Engineering & Technology

№	Surname	Name	University	Scientific interests	Link to portfolio
1.	Shitikova	Marina	Moscow State University of Civil Engineering	1) Modelling and analysis of dynamic properties of viscoelastic auxetics (materials with negative Poisson's ratio). 2) Analysis of dynamic response of plates with complex rheology subjected to different dynamic loads. 3) Analysis of dynamic response of shells with complex rheology subjected to different dynamic loads. 4) Development of mathematical models of auxetics and their applications to the problems of shock interaction. 5) Analysis of dynamic response of cylindrical shells subjected to different combinations of internal and internal resonances via fractional order operators. 6) Analysis of transient dynamic behavior of thin-walled structural elements made of materials, features of which are described by the Cosserate psevdo-continuum. 7) Dynamic behavior of structures and their elements under extreme loading. 8) The influence of temperature on the dynamic behavior of structural elements during shock loading with due account for microstructural changes within the contact domain. 9) Mathematical modelling of dynamic behavior of plates rested on a viscoelastic foundation using different rheological models with fractional derivatives. 10) Dynamic analysis of nonlinear behavior of suspension combined systems subjected to moving loads.	https://mgsu.ru/postupayushchim/olimp/olimpiady/open-doors/open-doors-en/research-supervisors/

№	Surname	Name	University	Scientific interests	Link to portfolio
2.	Ivashkina	Elena	National Research Tomsk Polytechnic University	petroleum chemistry, alkylation, dehydrogenation, catalytic cracking, multistage processes, modeling, catalyst deactivation, thermodynamics, kinetics.	https://tpu.ru/upload/medialibrary/867/s7jl4psxwomgu0yzvlna0e2vne0zq1ff/Ivashkina-_A.YA._.pdf
3.	Tverdokhlebov	Sergei	National Research Tomsk Polytechnic University	The concept of hybrid coatings and materials based on metals, calcium phosphates, organic acid polymers and fluorocarbon plastics for reconstructive surgery is being developed. Development of methods and means for molding bioactive polymer matrices and 3D materials with a high surface-to-volume ratio and controlled porosity for regenerative medicine. Development of physical and chemical methods, as well as means for modifying the surface of materials for biomedical use to impart special properties.	https://tpu.ru/upload/medialibrary/197/7wgaotvpv3pq7cnelcnorurzfejv3goc/Tverdokhleboa-_AYA_.pdf
4.	Dolganova	Irena	National Research Tomsk Polytechnic University	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.	https://tpu.ru/upload/medialibrary/317/fmamcrjj60p04k18k2sqc9hq8bjlphvt/Dolganova-en..pdf
5.	Belinskaya	Nataliya	National Research Tomsk Polytechnic University	Thermodynamics, kinetics, mechanisms of reactions of petroleum hydroprocesses (hydrodewaxing, hydrocracking). Deactivation of catalysts of petroleum hydroprocesses (hydrodewaxing, hydrocracking). Mathematical modelling and optimization of petroleum hydroprocesses (hydrodewaxing, hydrocracking). Production and exploitation of motor fuels. Development and application of computer modelling systems of petroleum refining processes.	https://tpu.ru/upload/medialibrary/a96/zxj9r3ct5ky9nmesyl0exgbbhyd10mzc/Belinskaya.pdf
6.	Brazovskii	Konstantin	National Research Tomsk Polytechnic University	Numerical modeling of biotechnical and living systems, creation of digital twins of biotechnical systems, design of devices, systems and implants for medical applications.	https://tpu.ru/upload/medialibrary/c68/gfuf67z448skko1skylzkni2idke7tem/Brazovskiy-_AYA_-_1_.pdf
7.	Pak	Aleksander	National Research Tomsk Polytechnic University	Plasma synthesis methods, high-temperature methods, refractory materials, waste disposal, ceramic materials, material prediction.	https://tpu.ru/upload/medialibrary/fd6/3wwe2x4o37eijpc1fjtlbqjqvz0p2id8/Pak-en..pdf

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8.	Nazarenko	Olga	National Research Tomsk Polytechnic University	Electrical explosion of conductors, production of nanopowders and study of their properties, search for directions for the use of nanopowders; thermal and mechanical properties of polymer composite materials; - water purification on natural and artificial sorbents.	https://tpu.ru/upload/medialibrary/dbc/yipmtn7v0q7dknjuclicpflt7kwxxcdl/Nazarenko-_AYA_.pdf
9.	Chulkov	Arseniy	National Research Tomsk Polytechnic University	Active thermal non-destructive control of impact damage, delamination and cracks in composite materials such as carbon fiber, carbon-carbon, fiberglass, organoplastic, etc. – Detection of water in honeycomb composite panels used in the aerospace industry. – Detection of latent corrosion in metal shells up to 6 mm thick and assessment of the relative entrainment of the material. – Non-contact determination of thermophysical properties of materials. – Development of portable thermal imaging flaw detectors-tomographs. – Development of methods for thermal control of materials.	https://tpu.ru/upload/medialibrary/47d/6xkqvlgrcssfa0vk38tz0842v3u86moz/CHulkov-AYA.pdf
10.	Chakhlov	Sergey	National Research Tomsk Polytechnic University	Development of software for processing and analyzing images and equipment management for their capture in X -ray and ultrasound non-destructive testing, as well as computed tomography (including betatron tomography).	https://tpu.ru/upload/medialibrary/9f3/ozh540anxvgf2dtfgn642p96ili9f698/CHakhlov-AYA.pdf
11.	Surmeneva	Maria	National Research Tomsk Polytechnic University	Biomaterial Science, Coating deposition, Materials characterization, Biomaterial Engineering, Biomaterial Functionalization, additive manufacturing, PECVD.	https://tpu.ru/university/documents/Surmeneva2024_Структура%20портфолио.русский%20(1).pdf
12.	Mostovshchikov	Andrei	National Research Tomsk Polytechnic University	Nanomaterials, Functional composite materials.	https://tpu.ru/upload/medialibrary/6a5/0jt5jelarxe13zj3vreer0nx730covi8/Mostovshchikov-_AYA_.pdf
13.	Khasanov	Oleg	National Research Tomsk Polytechnic University	Net-shaping the dry nano- and micro-scaled powders in required articles with use the powerful ultrasonic assistance and collector pressing method. Consolidation of the nano-, micro-scaled powders	https://tpu.ru/upload/medialibrary/d6f/tw18cxz0z43kb8m42n0p3lncl44v9dgp/KHasanov-_AYA_.pdf

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				having ceramic or composite compositions by the spark plasma sintering.	
14.	Kudiiarov	Viktor	National Research Tomsk Polytechnic University	Hydrogen Purification. Hydrogen storage. Interaction of hydrogen with materials.	https://tpu.ru/upload/medialibrary/701/kjsjbh25fn3s5hnk7tumkthn2nhuuj8g/Kudiyarov-_AYA_.pdf
15.	Martyushev	Nikita	National Research Tomsk Polytechnic University	Subtractive processing of workpieces produced by additive technologies. Manufacturing of metallic blanks using various additive technologies.	https://tpu.ru/upload/medialibrary/261/h09lfrp2xbvvkctkffzkemw3csuo9xax/Martyushev-AYA..pdf
16.	Dolganov	Igor	National Research Tomsk Polytechnic University	Processes of oil refining and petrochemistry, alkylation of hydrocarbons, production of petroleum, multi-stage processes, non-stationary mathematical modeling, deactivation of catalysts and reaction media, thermodynamics, kinetics, coke formation.	https://tpu.ru/upload/medialibrary/381/8ovkn4jfqabw0qsfd32h6oym702zrj9y/Dolganov-I.M.-_AYA_.pdf
17.	Larionov	Kirill	National Research Tomsk Polytechnic University	Waste processing to obtain useful and energy-valuable products. Increasing the efficiency of energy equipment operating on organic fuels.	https://tpu.ru/university/documents/%D0%9B%D0%B0%D1%80%D0%B8%D0%BE%D0%BD%D0%BE%D0%B2%20%D0%90%D0%AF.pdf
18.	Kashkarov	Egor	National Research Tomsk Polytechnic University	Materials science, condensed state physics, materials synthesis, composite materials, protective coatings, 2D MXene, high-entropy materials, membrane materials for gas separation, hydrogen storage materials, catalysts, hydrogen energy, aerospace and transportation materials.	https://tpu.ru/upload/medialibrary/760/bv2a5ggcdzpc7pfe47jg8563j1qd1w9t/Kashkarov-AYA.pdf
19.	Erisov	Yaroslav	Samara University	1. The constitutive equations of plasticity theory of orthotropic, including transtropic, media, which explicitly take into account such structural parameters of the material as the elastic constants of the crystal lattice and the crystallographic texture, as well as special cases for plane stress and strain states and simplified linearized form are developed. 2. Mathematical models for constructing theoretical forming limit curves of sheet metal during forming, taking into account the crystallographic orientation of	https://ssau.ru/files/priem_doc/postgraduate/erisov_en.pdf

№	Surname	Name	University	Scientific interests	Link to portfolio
				the blank structure. 3. Equations and ratios that allow, in a theoretical analysis of the processes of drawing, bending and stretch-wrap forming, to determine the optimal crystallographic orientation of the structure of the blanks. The results of the analysis of the influence of typical crystallographic orientations of aluminum alloys on the anisotropy, yield strength, as well as on the behavior and limit strains of sheet blanks during plastic forming. 4. Mathematical and computer models for calculating the influence of the crystallographic orientation of the structure of the metal base on the operational characteristics of metal-matrix and metal-polymer composite materials. Results of the analysis of the influence of typical crystallographic orientations of an aluminum alloy matrix on the tensile strength of a fibrous composite material, fracture toughness and ultimate load bearing capacity of a metal-polymer composite material of the GLARE type. 5. Evolution of the crystallographic orientation of the structure and its relationship with mechanical and technological properties in the manufacture of sheet semi-finished products from advanced aluminum alloys of the Al-Li (1424 and V-1461) and Al-Mg-Sc (V-1579) systems.	
20.	Starinova	Olga	Samara University	Professional, responsive and cohesive research team. Interaction is carried out with leading Russian and foreign scientists working in the field of interests of the scientific group. The results of scientific work are constantly published in highly cited scientific journals and reported at leading specialized international conferences.	https://ssau.ru/storage/pages/5566/file_66f6b8b91fafb0.23755827.pdf

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21.	Uglanov	Dmitry	Samara University	1. Improving the cooling efficiency of turbine blades of GTE. 2. Improving the efficiency of the gas turbine engine through the use of a highly efficient heat exchanger-regenerator. 3. Development and creation of a methodology for determining the characteristics of low-temperature power plants using low-potential cryoproduct heat. 4. Development of effective methods of energy storage based on cryogenic energy converters. 5. Development of experimental and theoretical methods for modeling work processes in cryogenic storage complexes during refueling, storage and selection of cryogenic product. 6. Development of a pulsating bidirectional turbine for the utilization of acoustic energy. 7. Development and research of working processes of a highly efficient cryogenic engine for an unmanned aerial vehicle. 8. Development and research of working processes of onboard cryogenic pulsation coolers of the IR receiver. 9. Creation of an internal combustion engine with internal heat recovery in a cycle (ICE-R).	https://ssau.ru/storage/pages/5566/file_66f6b8b92188a7.09167245.pdf
22.	Kukaev	Alexander	Saint Petersburg Electrotechnical University “LETI”	Development of inertial navigation sensors based on surface acoustic waves, whispering gallery modes and other acoustic, optical, piezoelectric effects. Modeling of temperature, electrical, optical, mechanical effects in various devices using the finite element method.	https://etu.ru/ru/obrazovatelnaya-deyatelnost/aspirantura-i-doktornatura/open-doors
23.	Petrov	Mikhail	Moscow Polytechnic University	theoretical and experimental studies of cold, hot and isothermal stamping processes at different dimensional levels; development, research and implementation of technological lubricants and coatings for material	https://mospolytech.ru/upload/medialibrary/ada/e80whz5xqnztkm3pcwbtc0e921617h6h/PNR_Profil_Petrov_Open_Doors_ang_2024.pdf

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				forming processes; research and development of additive manufacturing technologies; research and development of equipment for material forming and additive technologies; Computer-aided design (CAD-CAO) and simulation (CAE) of material forming and additive manufacturing technologies; educational and industrial application of VR/AR/MR; development and investigation of multilevel reverse engineering technologies; application of material forming and additive manufacturing technologies in biomedical engineering;industrial application and production technologies of cellular structures.	
24.	Strekalina	Daria	Moscow Polytechnic University	Prospective technology for producing details from hard alloys for particle detectors in Mega Science projects and for medical physics.	https://mospolytech.ru/upload/medialibrary/0f5/l179i1xhnk8ipmklbdf3qy3cmitk8i4r/PNR_Profil_Strekalina_Open_Doors_angl_2024.pdf
25.	Furletov	Yury	Moscow Polytechnic University	Autonomous driving systems, advanced driver assistance systems (ADAS), audio signal processing systems and vehicle remote diagnostics and technical condition monitoring systems.	https://mospolytech.ru/upload/medialibrary/853/vq337pfctexwuunmcmijomu1jj2fzrpd/PNR_Profil_Furletov_Open_Doors_angl2_final_2024.pdf
26.	Shadrin	Sergey	Moscow Polytechnic University	Autonomous driving systems, advanced driver assistance systems (ADAS), intelligent transport systems and vehicle remote diagnostics and technical condition monitoring systems.	https://mospolytech.ru/upload/medialibrary/523/vphwnu5ca41hiam0rhg5hkxm2sy14y6o/PNR_Profil_SHadrin_Open_Doors_angl_2024.pdf
27.	Barskov	Victor	Peter the Great St. Petersburg Polytechnic University	Micro turbine Technology and Design Autonomous Turbine Installations with External Heat Supply Mathematical Modeling and Optimization of Turbine	https://opendoors.spbstu.ru/files/supervisors_portfolio/barskov.pdf

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				Installations Energy Source Analysis for Distributed Energy Systems Innovative Methods for Heat and Mass Transfer in Turbomachines Monitoring and Diagnostics of Turbomachinery Waste Heat Recovery Systems Renewable Energy and Clean Technologies	
28.	Basati Panah	Mehdi	Peter the Great St. Petersburg Polytechnic University	Optimizing turbine performance across various energy sectors and exploring sustainable energy solutions using innovative materials and technologies.	https://opendoors.spbstu.ru/files/supervisors_portfolio/basati_panah_mehdi.pdf
29.	Vatin	Nikolai	Peter the Great St. Petersburg Polytechnic University	Energy efficiency, construction, energy, resource conservation, structural energy conservation, environmental protection, enclosing structures, climate-adaptive structures, energy modeling, green construction.	https://opendoors.spbstu.ru/files/supervisors_portfolio/vatin.pdf
30.	Vinnichenko	Maksim	Peter the Great St. Petersburg Polytechnic University	Optical phenomena and nonequilibrium charge carriers in semiconductors and nanostructures. Development of new optoelectronic devices (sources and detectors) in the mid-infrared and terahertz spectral ranges.	https://opendoors.spbstu.ru/files/supervisors_portfolio/vinnichenko.pdf
31.	Efanov	Dmitry	Peter the Great St. Petersburg Polytechnic University	Development of testable, self-checking and fault-tolerant structures of digital systems using coding theory and information methods, as well as special classes of Boolean functions Study of technologies and methods for monitoring transport infrastructure and industry The closely integrated monitoring systems and intelligent traffic control systems synthesis methods research for motorway and railway transport purposes	https://opendoors.spbstu.ru/files/supervisors_portfolio/efanov.pdf
32.	Kerpeleva	Svetlana	Peter the Great St. Petersburg	Biomechatronics, Mechatronic systems for working in extreme conditions, Materials Science, Tribology.	https://opendoors.spbstu.ru/files/supervisors_portfolio/kerpeleva.pdf

№	Surname	Name	University	Scientific interests	Link to portfolio
			Polytechnic University		
33.	Krivtsov	Anton	Peter the Great St. Petersburg Polytechnic University	Analytical and computer models of nonequilibrium thermal processes in ultrapure crystals.	https://opendoors.spbstu.ru/files/supervisors_portfolio/krivtsov.pdf
34.	Kuzkin	Vitaly	Peter the Great St. Petersburg Polytechnic University	Analytical and computer models of nonequilibrium thermal processes in ultrapure crystals.	https://opendoors.spbstu.ru/files/supervisors_portfolio/kuzkin.pdf
35.	Naumov	Anton	Peter the Great St. Petersburg Polytechnic University	Synthesis of composite materials by means of Friction Stir Processing.	https://opendoors.spbstu.ru/files/supervisors_portfolio/naumov.pdf
36.	Potekhin	Vyacheslav	Peter the Great St. Petersburg Polytechnic University	R & D in the field of cyber-physical systems, industrial automation and control systems (Engineering).	https://opendoors.spbstu.ru/files/supervisors_portfolio/potekihin.pdf
37.	Anton	Radaev	Peter the Great St. Petersburg Polytechnic University	Application of mathematical modeling tools to solve problems in the field of technology and organization of road construction.	https://opendoors.spbstu.ru/files/supervisors_portfolio/radaev.pdf
38.	Semenov	Konstantin	Peter the Great St. Petersburg Polytechnic University	Probability theory and mathematical statistics, data processing, processing of inaccurate and incomplete data, decision-making under conditions of uncertainty, measurement methods, instrumentation, information-measuring and control systems, metrologically significant software, metrology, mathematical modelling, algorithmization, numerical methods, computational mathematics, physical modelling of processes in fluids, applied hydrodynamics, interaction of sea waves with hydraulic structures, performing meta-analyses, the impact of eco-innovations on the financial performance of	https://opendoors.spbstu.ru/files/supervisors_portfolio/semenov.pdf

№	Surname	Name	University	Scientific interests	Link to portfolio
				companies (in the context of their size), scientometrics.	
39.	Belov	Pavel	ITMO University	Metamaterials: 1. Radiophysics 2. Diffraction and scattering of electromagnetic waves 3. Metamaterials 4. Wireless data transmission 5. Magnetic resonance imaging 6. Nanoantennas	https://aspirantura.itmo.ru/?main=43
40.	Struchalin	Pavel	National Research Nuclear University MEPhI	Thermal physics, nuclear energy, solar energy, thermal properties, heat exchange.	https://eng.mephi.ru/study-with-us/contests/supervisors/pgstruchalin