Appendix 7
to the protocol of absentee voting of the Organizing Committee of the International Olympiad of the Association "Global Universities" No. 1–з dated 06/10/2024.

PETROV MIKHAIL A. Research profile (portfolio) of potential research supervisor of post-graduate track participants in the international Olympiad "Open Doors: Russian Scholarship Project"

UNIVERSITY	**MOSCOW POLYTECHNIC UNIVERSITY (Moscow Polytech)**
Level of English proficiency	Fluent
Courses and fields of studies offered for applicants	2.5.7 Technologies and Machines for material forming (scientific specialty code) 2.6.4. Metal Forming (scientific specialty code)
Projects for potential academic supervision	Currently, there is no funded research project underway
Topics offered for prospective researches	• Development of forming technologies for prepregs based on carbon fiber and glass fiber • Development of automated stamping areas with the application of in-line 3D-scanning technique • Improvement of AR technology for production conditions • Development and research of manufacturing technologies for complex parts production by material forming and additive technologies • Research of 3D micro-printing of cellular structures

Research supervisor:
Mikhail A. Petrov,
Dr.-Ing. (equivalent to a PhD),
TU BAF, Germany,

Candidate of Science (equivalent to a PhD)
Moscow Polytech, former MSTU "MAMI".

2.03.03 Engineering, mechanical
2.11.04 Engineering, industrial

Supervisor's research interests:

- 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 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.

Study program highlights:

- Laboratory of material forming;
- Laboratory for additive technologies;
- PC-pool with a basic set of engineering software (CAD-CAO-CAE).

Supervisor's specific requirements:
Hard skills in computer programs for geometric design (CAD/CAGD), optimization (CAO), strength analysis and modeling of material forming processes and additive manufacturing technologies (CAE).

Supervisor's publications
Five the most important publications for the last 5 years:

Web of Science – 6
(https://www.webofscience.com/wos/author/record/560230)
Scopus – 11
(https://www.scopus.com/authid/detail.uri?authorId=8980725400)
RSCI – 118, including 40 publications, indexed in core RSCI
(https://elibrary.ru/author_items.asp?authorid=176668&pubrole=100&show_refs=1&show_option=2)

1. El-Deeb, I.S., Petrov, M.A., Grabowik, C., Esmael, E.G., Rashad, M., Ebied, S. (2024). Mechanical Properties of PLA Printed Samples in Different Printing Directions and Orientations Using Fused Filament Fabrication, Part 2: Experimental Research. In: Burduk, A., Batako, A.D.L., Machado, J., Wyczółkowski, R., Dostatni, E., Rojek, I. (eds) Intelligent Systems in Production Engineering and Maintenance III. ISPEM 2023. Lecture Notes in Mechanical Engineering. Springer, Cham. DOI: 10.1007/978-3-031-44282-7_48.
2. M.A. Petrov, D.A. Romashov, V.V. Isakov. Estimation of Sheet Deformation of Aluminium Blank using Non-Contact Methods on the Example of Erichsen Cupping Test (2023). Scientific Visualization 15.4: 124 - 139, DOI: 10.26583/sv.15.4.10.
3. Расчёт и анализ процессов объёмной штамповки с вращающимся инструментом при помощи конечно-элементного моделирования, Петров М.А., Матвеев А.Г., Петров П.А., Сапрыкин Б.Ю. Вестник Московского авиационного института. 2022. Т. 29. № 1. С. 226-244. DOI: 10.34759/vst-2022-1-226-244.
4. Petrov, M.A., Gnevashev, D.A. & Krutina, E.V. Numerical Simulation of the Upsetting of Bronze Samples with Allowance for Changes in Their Relative Density. Russ. Metall. 2022, 1714–1724 (2022). DOI: 10.1134/S0036029522130274.
5. Magerramova, L.; Isakov, V.; Shcherbinina, L.; Gukasyan, S.; Petrov, M.; Povalyukhin, D.; Volosevich, D.; Klimova-Korsmik, O. Design, Simulation and Optimization of an Additive Laser-Based Manufacturing Process for Gearbox Housing with Reduced Weight Made from AlSi10Mg Alloy. Metals 2022, 12, 67. DOI: 10.3390/met12010067.

Impacts of Supervisor's research:

- Stamp for the production of rod products with thickening (utility patent model), RU 98957U1.
- Einrichtung zur Herstellung von Hohlkugeln und Schalen aus metallischen Schmelzen (Patent for an invention) DE102011103315B3.
- Device for studying the plasticity of metals and alloys (utility patent model), RU 145529.