	Peter the Great St.Petersburg Polytechnic University
Educational program and field of the educational program for which the applicant will be accepted	2.6.1. Metal science and heat treatment of metals and alloys
List of research projects of the potential supervisor	 The Grant of President of Russian Federation for young PhD in technical science 2012-2013. MK6134.2012.8 "Hot rolling technology for high-strength automotive dual-phase steel D P Federal program, agreement №14.B37.21.1101, Research and numerical simulation of microstructure and failure mechanisms formation of high purity nano crystalline Be during 0 G Grant British Petroleum for the group headed by young PhD in technical science 2013. "Chemical composition of pipeline steels strength category X70 и X80 optimization". Head of the e The Grant of President of Russian Federation for young PhD in technical science 2014-2015. MK-4231.2014.8 "Influence of severe plastic deformation during friction stir welding on w Grant British Petroleum for the group headed by young PhD in technical science 2014. "Hot rolling technology for lean- d Grant British Petroleum for the group headed by young PhD in technical science 2014. "Hot rolling technology for lean- d Mega-grant of Ministry of education and science in terms of the order of the Government of Russian Federation №220, wgreement №14.Z50.31.0018, senior researcher at the Laboratory D The Grant of President of Russian Federation for young PhD in technical science 2016-2017. MK-7840.2016.8 "The microstructure and properties behavior of Al alloys during friction b Federal program, agreement N=14.575.21.0155, Evelopment of scientific and technological basics for digital production of industrial scale products made of Al alloys by means of wire and arc additive manufacturing and subsequent joining by

List of the topics offered for the prospective scientific research	 Optimization of Friction Stir Welding and Processing techniques to increase the quality of the joints and productivity of the process for aluminium alloys Optimization of Friction Stir Welding and Processing techniques to increase the productivity of the process for aluminium alloys
	aluminium alloys
	• Optimization of Friction Stir Welding technique to increase

	the quality of the dissimilar materials jointsDevelopment of Friction Stir Spot Welding techniques for aluminium alloys.
	 Supervisor's research interests Optimization of Friction Stir Welding and Processing techniques to increase the quality of the joints and productivity of the process for aluminium alloys Finite element modeling of the Friction Stir Welding process Physical simulation techniques development for metal plastic deformation processing
Research supervisor: Anton A. Naumov, PhD, Associate Professor (Peter the Great St.Petersburg	 Friction Stir Welding of dissimilar materials Research highlights Research in the field of Friction Stir Welding will be provided on the unique technological and scientific equipment: 5-axis FSW machine with the options for Impulse and High-Speed FSW; thermomechanical simulator Gleeble-3800; supercomputer. Supervisor's specific requirements: Basic knowledge and experience in Friction Stir Welding/Processing; Experience in Finite Element/Volume modeling (Ansys,
	Basic knowledge in Metallic Materials Science.

Supervisor's publications
1. Wang, K., Naumov, A., Gushchina, M. et al. The effect of
impulses on precipitation behavior in 7075-T6 aluminum alloy
joint by impulse friction stir welding. Int J Adv Manuf Technol
128, 373–389 (2023). https://doi.org/10.1007/s00170-023-118726
(O2).
2. Naumov, A., Rylkov, E., Polyakov, P., Isupov, F., Rudskov,
A., Aoh, JN., Popovich, A., Panchenko, O. / Effect of different
tool probe profiles on material flow of al-mg-cu allov joined by
friction stir welding // Materials 14 (21) 6296 DOI
10 3390/ma14216296 (O2)
2 Marazava I Obrasav A Naumay A Králiska A
Golubey I Bokov D.O. Downov N. Weiß S. Michailov V /
Impact of impulses on microstructural evolution and mechanical
nerformance of al-mg-si allow joined by impulse friction stir
welding // Materials 14 (2) 347 np 1_{-16} DOI:
$103390/ma14020347(\Omega^2)$
4 Hovanski V Sato V Unadhvav P Naumov A A
Kumar N / Eriction Stir Welding and Processing XIII // Springer
2025 223 Book ISBN 078 3 031 80806 8
5 Anton Naumov Fodor Jaunov Evganii Dylkov Daval
5. Anton Naumov, Fedor Isupov, Evgenni Kyrkov, Faver
roiyakov, wiknali ranieleev, Aleksey Skupov, Sergio I. Amancio-
Filho, Oleg Panchenko / Microstructural evolution and mechanical
performance of Al-Cu-Li alloy joined by friction stir welding //
Journal of Materials Research and Technology,
Volume 9(6), 2020, pp. 14454–14466.
https://doi.org/10.1016/j.jmrt.2020.10.008, (Q1)
• Patent № RU 2460809 C1 "Methods of microalloyed steels
thick sheets production".
• Patent № RUS 2624613 "Methods for materials testing by
tension-compression technique and the sample geometry" • Patent
No RUS 183279 "Consumable tool for coating denosition by means
of tool and substrate materials deformation"