

RESUME

January-2023

1. PERSONAL DETAILS

Full Name: Gennadii Liziakin
Identity No: 345878011
Date of birth: 19/8/1990
Place of birth: Moscow
Marital status: married
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2. ACADEMIC DEGREES

2018 PhD , Faculty of Physics, Joint Institute for High Temperatures of the Russian Academy of Sciences, Russian Federation Gavrikov A
2014 MSc , Faculty of Physics, National Research Nuclear University MEPhI, Russian Federation Gavrikov A

3. ACADEMIC APPOINTMENTS

2022 - 2023 Research Associate, Faculty of Physics, Technion Research & Development Foundation, Israel
2018 - 2022 Senior Researcher, Electrophysical and Plasma Technologies Department, Joint Institute for High Temperatures of the Russian Academy of Sciences ,RussianFederation
2015 - 2018 Research Associate, Electrophysical and Plasma Technologies Department, Joint Institute for High Temperatures of the Russian Academy of Sciences ,RussianFederation

2014 - 2015 Research Intern, Electrophysical and Plasma Technologies Department, Joint
Institute for High Temperatures of the Russian Academy of Sciences
, Russian Federation

4. PROFESSIONAL EXPERIENCE (OUTSIDE ACADEMIA)

5. RESEARCH INTERESTS (BRIEFLY)

- Controllable electric field in a cylindrical plasma column with a longitudinal magnetic field
- Plasma mass separation
- Vacuum arc with distributed cathode spot
- Reflex discharge

6. TEACHING EXPERIENCE

7. ACTIVITIES

8. DEPARTMENTAL ACTIVITIES

9. PUBLIC PROFESSIONAL ACTIVITIES

10. MEMBERSHIP IN PROFESSIONAL SOCIETIES

11. FELLOWSHIPS, AWARDS AND HONORS

- 2015 The third prize of the scientific works competition of the JIHT RAS students and young
scientists , Joint Institute for High Temperatures of the Russian Academy of Sciences
- 2016 Professor Yuly Kreindel award for outstanding research work in Modification of
Materials among young scientists , 5th International Congress on Energy Fluxes and
Radiation Effects, Tomsk, Russia
- 2017 III place in the plenary session. For the high scientific and practical value of the report at
the conference of young specialists , Conference Innovations in nuclear power , JSC
"NIKIET", Russia
- 2019 The third prize of the scientific works competition of the JIHT RAS students and young
scientists , Joint Institute for High Temperatures of the Russian Academy of Sciences
- 2021 Medal of the Russian Academy of Sciences with awards for young scientists in the field
of physical and technical problems of energy , Russian Academy of Sciences

12. GRADUATE STUDENTS

Completed PhD theses

Completed MSc Theses

PhD Theses in Progress

MSc Theses in Progress

13. SPONSORED LONG-TERM VISITORS AND POST-DOCTORAL

ASSOCIATES

14. RESEARCH GRANTS

Competitive

- 2020 - 2021 Ministry of Science and Higher Education of the Russian Federation, Radio-frequency gradient force in an inductively coupled plasma. Investigation of the spacial characteristics of an oscillating electromagnetic field as an influence factor on the transverse plasma potential profile., 20000 USD, Gennadii Liziakin (PI)
- 2021 - 2022 Russian Science Foundation, Increase in the separation coefficient of a mixture simulating SNF in a plasma mass separator with a stationary potential well and additional injection of electrons, 200 000 USD, Gennadii Liziakin (PI)

Industrial and other sources

15. PUBLICATIONS

15.1 Theses

- Liziakin G** (2018) "Creation of a controlled stationary electric field in the plasma of a mass separator" Gavrikov A, Joint Institute for High Temperatures of the Russian Academy of Sciences, Moscow, Russia.
- Liziakin G** (2014) "Experimental investigation of the vacuum arc with a diffuse cathode spot on gadolinium" Gavrikov A, National Research Nuclear University MEPhI, Moscow, Russia.

15.2 Refereed papers in professional journals

1. R. K. Amirov, N. A. Vorona, A. V. Gavrikov, **G. D. Liziakin**, V. P. Polishchuk, I. S. Samoilov, V. P. Smirnov, R. A. Usmanov, and I. M. Yartsev, Vacuum arc with a distributed cathode spot as a plasma source for plasma separation of spent nuclear fuel and radioactive waste, Plasma Phys. Rep., 41, 808 (2015).
2. R. K. Amirov, N. A. Vorona, A. V. Gavrikov, **G. D. Liziakin**, V. P. Polistchook, I. S. Samoylov, V. P. Smirnov, R. A. Usmanov, and I. M. Yartsev, Study of the feasibility of distributed cathodic arc as a plasma source for development of the technology for plasma separation of SNF and radioactive wastes, Phys. At. Nucl., 78, 1631 (2015).
3. **G. D. Liziakin**, A. V. Gavrikov, Y. A. Murzaev, R. A. Usmanov, and V. P. Smirnov, Parameters influencing plasma column potential in a reflex discharge, Phys. Plasmas, 23, 123502 (2016).
4. A. Samokhin, A. Gavrikov, **G. Liziakin**, R. Usmanov, V. Smirnov, Experiment and Numerical Simulation of Peculiarities in the Development of Helium DC Discharge in Reflex Geometry, Plasma and Fusion Research, 11, 1401116 (2016).
5. **G. Liziakin**, A. Gavrikov, R. Usmanov, R. Timirkhanov, and V. Smirnov, Electric potential

- profile created by end electrodes in a magnetized rf discharge plasma, *AIP Adv.*, 7, 125108 (2017).
6. R. K. Amirov, A. V. Gavrikov, **G. D. Liziakin**, V. P. P. Polishchuk, I. S. Samoylov, V. P. Smirnov, R. A. Usmanov, N. A. Vorona, and I. M. Yartsev, Diffuse Vacuum Arc on the Nonthermionic Lead Cathode, *IEEE Trans. Plasma Sci.*, 45, 140 (2017).
 7. Antonov N.N., **Liziakin G.D.**, Investigation of the influence of the material and geometry of the outer surface of the anode of the plasma jet injector on the spatial distribution of the electric field in the buffer plasma of the reflex discharge, *Bulletin of the Joint Institute for High Temperatures*, 1, 19 (2018) [in Russian].
 8. N. Antonov, **G. Liziakin**, R. Usmanov, A. Gavrikov, N. Vorona, and V. Smirnov, “The influence of reflex discharge electric field on propagation of injected lead plasma jet,” *Phys. Plasmas*, 25, 123506 (2018).
 9. R.A. Usmanov, R.Kh. Amirov, A.V. Gavrikov, **G.D. Liziakin**, V.P. Polistchook, I.S. Samoylov, V.P. Smirnov, N.A. Vorona, and I.M. Yartsev, Diffuse vacuum arc on cerium dioxide hot cathode, *Phys. Plasmas*, 25, 063524 (2018).
 10. A.D. Melnikov, R.A. Usmanov, N.A. Vorona, A.V. Gavrikov, **G.D. Liziakin**, V.P. Smirnov, R.A. Timirkhanov, Determination of the electron temperature by the line-ratio method in SNF plasma separator, *Phys. At. Nucl.*, 81, 1536 (2018).
 11. Vorona N V, Gavrikov A V, Kuzmichev S D, **Liziakin G D**, Melnikov A D, Murzaev Y A, Smirnov V P, Timirkhanov R A and Usmanov R A, Large Helicon Plasma Source for the Method of Plasma Separation of Spent Nuclear Fuel and Radioactive Waste, *IEEE Trans. Plasma Sci.* 47, 1223 (2019).
 12. A. V. Gavrikov, N. A. Vorona, S. D. Kuzmichev, **G. D. Liziakin**, and R. A. Timirkhanov, On Possible Causes of Helicon Discharge Instability, *Bulletin of the Joint Institute for High Temperatures*, 3, 10 (2019) [in Russian].
 13. A. P. Oiler, **G. D. Liziakin**, Analysis of the possibility of measuring the plasma potential in a low-pressure high-frequency discharge with a floating probe, *Bulletin of the Joint Institute for High Temperatures*, 3, 63-66 (2019) [in Russian].
 14. Y. Murzaev, **G. Liziakin**, A. Gavrikov, R. Timirkhanov, and V. Smirnov, A comparison of emissive and cold floating probe techniques for electric potential measurements in rf inductive discharge, *Plasma Sci. Technol.*, 21, 45401 (2019).
 15. Usmanov, R. A., Amirov, R. Kh, Gavrikov, A. V, **Liziakin, G. D.**, Melnikov, A. D., Polistchook, V. P., Samoylov, I. S., Smirnov, V. P., Vorona, N. A., Yartsev, I. M., Diffuse vacuum arc with heated cathode made of ceramic (CeO₂) and metal (Cr) mixture, *Plasma Sources Sci. Technol*, 29, 015004 (2020).
IF – 4.124
 16. **G Liziakin**, A Gavrikov, V Smirnov, Negative electric potential in a cylindrical plasma column with magnetized electrons, *Plasma Sources Sci. Technol*, 29, 015008, (2020).
IF – 4.124
 17. D. Melnikov, R. A. Usmanov, R. K. Amirov, N. N. Antonov, A. V. Gavrikov, **G. D. Liziakin**, V. P. Polistchook, V. P. Smirnov, Study of the Ion Composition of the Diffuse Vacuum Arc on a Hot Cathode by the Time-of-Flight Method, *Plasma Phys Reports*, 46, 611 (2020).

IF – 1.133

18. **G. Liziakin**, N. Antonov, V. S. Smirnov, R. Timirkhanov, A. Oiler, R. Usmanov, A. Melnikov, N. Vorona, S. Kislenko, A. Gavrikov and V. P. Smirnov, Plasma mass separation in configuration with potential well, J Phys D Appl Phys, 54, 414005 (2021).

IF – 3.409 PHYSICS, APPLIED - Q2

19. **G. Liziakin**, A. Oiler, A. Gavrikov, N. Antonov and V. Smirnov, Radial distribution of the plasma potential in a cylindrical plasma column with a longitudinal magnetic field, J. Plasma Phys., 87, 905870414 (2021).

IF – 2.691 PHYSICS, FLUIDS & PLASMAS - Q2

20. **Liziakin G**, Antonov N, Usmanov R, Melnikov A, Timirkhanov R, Vorona N, Smirnov V S, Oiler A, Kislenko S, Gavrikov A and Smirnov V P, Experimental demonstration of plasma mass separation in a configuration with a potential well and crossed electric and magnetic fields, Plasma Phys. Control. Fusion, 63, 032002 (2021).

IF – 2.532 PHYSICS, FLUIDS & PLASMAS - Q3

21. R A Usmanov, N N Antonov, A V Gavrikov, **G D Liziakin**, A D Melnikov, A P Oiler, V P Smirnov, R A Timirkhanov, L S Volkov and N A Vorona, Analysis of non-ionized substance losses in experiments on plasma mass separation, Plasma Sci Technol, 24, 085504, (2022).

F – 1.842 PHYSICS, FLUIDS & PLASMAS - Q3

22. P. Oiler, **G. D. Liziakin**, A. V. Gavrikov and V. P. Smirnov, The Optimal Axis-Symmetrical Plasma Potential Distribution for Plasma Mass Separation, Molecules, 27(20), 6824 (2022).

IF – 4.927 CHEMISTRY, MULTIDISCIPLINARY – Q2

23. A.P. Oiler, **G.D. Liziakin**, A.V. Gavrikov, V.P. Smirnov, Plasma rotation velocity in a reflective discharge with a thermionic cathode, Technical Physics, 92, 10, 1529-1536 (2022) [in Russian]

F – 0.489 PHYSICS, APPLIED - Q4

24. **G.D. Liziakin**, N.N. Antonov, N.A. Vorona , A.V. Gavrikov , S.A. Kislenko , S.D. Kuzmichev , A.D. Melnikov , A.P. Oiler , V.P. Smirnov , R.A. Timirkhanov , R.A. Usmanov, On the concept of plasma mass-separation in crossed $E \times B$ fields with a potential well (Review), Plasma Phys. Rep. 48, 1226 (2022)

F – 1.133 PHYSICS, FLUIDS & PLASMAS - Q4

Accepted (or in press) papers

Submitted papers

Review papers

15.3 Books

Monographs and textbooks

Edited Books

15.4 Book chapters

15.5 Refereed papers in conference proceedings

1. R. Kh Amirov, N. N. Antonov, N. A. Vorona, A. V. Gavrikov, **G. D. Liziakin**, V. P. Polistchok, I. S. Samoylov, V. P. Smirnov, R. A. Usmanov, and I. M. Yartsev, The stationary vacuum arc on non-thermionic hot cathode, *J. Phys. Conf. Ser.*, 653, 012164 (2015).
2. R. Kh Amirov, N. N. Antonov, **G. D. Liziakin**, V. P. Polistchok, I. S. Samoylov, R. A. Usmanov, and I. M. Yartsev, High-voltage discharge in supersonic jet of plumbum vapor, *J. Phys. Conf. Ser.*, 653, 012165 (2015).
3. **G. Liziakin** and R. Usmanov. Current-voltage characteristics of the high pressure reflex discharge in helium, *Physics Procedia*, 71, 138 (2015).
4. A A Samokhin, **G D Liziakin**, A V Gavrikov, R A Usmanov and V P Smirnov, Current evolution and plasma density space distribution in the reflex discharge with ring cathodes, *J. Phys. Conf. Ser.*, 774, 012198 (2016).
5. R Kh. Amirov, N A Vorona, A V Gavrikov, **G D Liziakin**, V P Polistchok, I S Samoylov, V P Smirnov, R A Usmanov, I M Yartsev and A S Ivanov, Di?use vacuum arc with cerium oxide hot cathode, *J. Phys. Conf. Ser.*, 774, 012190 (2016).
6. R. K. Amirov, N. A. Vorona, A. V. Gavrikov, **G. D. Liziakin**, V. P. Polistchok, I. S. Samoylov, V. P. Smirnov, R. A. Usmanov, and I. M. Yartsev, Plasma jet characteristics in vacuum arc with diffused cathode spot, *J. Phys. Conf. Ser.*, 830, 012059 (2017).
7. A Gavrikov, S Kuzmichev, **G Lizyakin**, V Smirnov, R Timirkhanov, R Usmanov and N Vorona, RF plasma generation in the chamber with the conducting walls, *EPJ Web of Conferences*, 157, 03062 (2017).
8. N N Antonov, A V Gavrikov, V P Smirnov, **G D Liziakin**, R A Usmanov, N A Vorona and R A Timirkhanov, The study of the plasma jets of lead and silver simulating spent nuclear fuel components, *J. Phys. Conf. Ser.*, 946, 012171 (2018).
9. **G D Liziakin**, A V Gavrikov, R A Usmanov and V P Smirnov, Propagation of the end-face electrodes potential in the plasma volume of rf discharge, *J. Phys.: Conf. Ser.* 946, 012173 (2018).
10. R Kh Amirov, A V Gavrikov, **G D Liziakin**, V P Polistchok, D A Pershin, I S Samoylov, V P Smirnov, R A Usmanov, N A Vorona and I M Yartsev, On the parameters of the di?used vacuum arc with cerium oxide hot cathode, *J. Phys. Conf. Ser.*, 946, 012170 (2018).
11. **G. D. Liziakin**, A. V Gavrikov, R. A. Usmanov, and V. P. Smirnov, The electric field of the electrodes immersed into the rotating plasmas, *J. Phys. Conf. Ser.*, 1147, 12130 (2019).
12. Melnikov A D, Usmanov R A, Gavrikov A V, **Liziakin G D**, Smirnov V P, Timirkhanov R A and Vorona N A, Application of line-intensity-ratio method for measurement of electron temperature of radio-frequency plasma of argon in magnetic field inside the plasma separator, *J. Phys. Conf. Ser.* 1147, 12131 (2019).

15.6 Patents (granted)

15.7 Research reports and other publications

16. CONFERENCES

16.1 Plenary, keynote or invited talks

International

National

1. **G Liziakin**, A Gavrikov, V Smirnov, Development of engineering and physical foundations and approbation of the plasma separation method to create technologies for the processing of spent nuclear fuel and radioactive waste, Innovations in nuclear energy, Russian Federation, 2017. (Plenary)

16.2 Contributed Talks and Posters

International Oral

1. R.Kh. Amirov, N.A. Vorona, A.V. Gavrikov, **G.D. Liziakin**, V.P. Polistchook, I.S. Samoylov, V.P. Smirnov, R.A. Usmanov, I.M. Yartsev, Experimental study of vacuum arc with low cathode current density as a source of metal plasma, The 42nd IEEE International Conference on Plasma Science, Turkey. 05-2015 .
2. **G. Liziakin**, N. Antonov, A. Gavrikov, A. Oiler, A. Melnikov, V. Smirnov, R. Timirkhanov, R. Usmanov, L. Volkov, N. Vorona, Pb+Ag mixture space separation in crossed fields of background discharge at the LaPlaS setup, Plasma Processing and Technology, Spain. 04-2022 .

International Poster

1. R Amirov, N Vorona, A Gavrikov, **G Lizyakin**, V Polistchook, I Samoylov, V Smirnov, R Usmanov, I Yartsev, Investigation of plasma flow in vacuum arc with hot cathode, High-Tech Plasma Processes, France. 06-2014 .
2. **Liziakin G.**, Gavrikov A., Smirnov V., Usmanov R., Samokhin A., The sag of the potential in low pressure reflex discharge, 42nd IEEE International Conference on Plasma Science, Turkey. 05-2015 .
3. Amirov R.Kh., N.N.Antonov, Vorona N.A., Gavrikov A.V., **Liziakin G.D.**, Polistchook V.P., Samoylov I.S., Smirnov V.P., Usmanov R.A., Yartsev I.M, Near cathode processes in stationary vacuum arcs with distributed cathode spot, 22nd International Symposium on Plasma Chemistry, Belgium. 07-2015 .
4. Gavrikov, S. Kuzmichev, **G. Liziakin**, V. Smirnov, R. Timirkhanov, R. Usmanov and N. Vorona , Helicon plasma generation in the chamber with the conducting walls, Radio Frequency Power In Plasma, France. 05-2017 .

5. **G Liziakin**, A Gavrikov, R Usmanov and V Smirnov, Formation of electrical potential profile in DC reflex discharge, XXXIII International Conference On Phenomena In Ionized Gases, Portugal. 07-2017 .
6. Antonov N.N., Usmanov R.A., **Liziakin G.D.**, Gavrikov A.V., Smirnov V.P., Development of a model substances plasma source for spent nuclear fuel plasma separation, Europhysics Conference on Atomic and Molecular Physics of Ionized Gases, United Kingdom. 07-2018 .
7. Antonov N., **Liziakin G.**, Usmanov R., Murzaev Y., Gavrikov A., Smirnov V., Study of the influence of the reflex discharge radial electric field on the propagation of the plasma flow of substances modeling the components of spent nuclear fuel, IX International Conference Plasma Physics and Plasma Technology, Belarus. 09-2018 .
8. N.Antonov, **G. Liziakin**, R. Usmanov, A. Gavrikov, V. Smirnov, R. Timirkhanov, S.Kuzmichev, Propagation of lead plasma jet in the crossed $E \times B$ fields in background reflex and RF discharges , Joint Conference of XXXIV International Conference on Phenomena in Ionized Gases (XXXIV ICPIG) and the 10th International Conference on Reactive Plasmas (ICRP-10), Japan. 07-2019 .

National Oral

1. **Liziakin G D**, Gavrikov A V, Usmanov R A, Smirnov V P., The parameters affecting the potential of the plasma column in the reflex discharge, XXXI International Conference on Equations of State for Matter, Russian Federation. 03-2016 .
2. **Liziakin G.D.** Gavrikov A.V. Usmanov R.A. Smirnov V.P., Measurement Of The Radial Field Distribution In A Penning Discharge By Isolated Probe, 5th International Congress on Energy Fluxes and Radiation Effects, Russian Federation. 10-2016 .

National Poster

1. Amirov R.Kh., Vorona N.A., Gavrikov A.V., Zhabin S.N., **Lizyakin G.D.**, Polistchok V.P., Samoylov I.S., Smirnov V.P., Usmanov R.A., Yartsev I.M., The stationary vacuum arc as plasma source for technology of ion separation , Physics of Extreme States of Matter, Russian Federation. 03-2013 .

16.3 Participation in organizing conferences

17. NOTES