

Curriculum Vitae

Mr. Dmitry Murzin

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Date of Birth: 22 January 1998

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Scopus Author ID: [57207842981](https://scopus.org/authorid/57207842981)

ResearcherID: [Q-2969-2018](https://pubs.rsos.royalsocietypublishing.org/author/Q-2969-2018)

Google Scholar ID: [IRUKtsIAAAAJ](https://scholar.google.com/citations?user=IRUKtsIAAAAJ)

IstinaResearcherID (IRID): [1038470](https://www.istina.com/en/author/1038470)

COLAB ID: [R-35DBF-11983-SK61K](https://colab.researchgate.net/publication/354811983)

ResearchGate: <https://www.researchgate.net/profile/Dmitry-Murzin-4>



Education

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| Sep., 2021 – Present | <i>Ph.D. student in Physics</i>
Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation |
| Sep., 2022 | <i>Supplementary Educational Program «Modern Achievements in Photonics»</i>
Siberian Federal University, Krasnoyarsk, Russian Federation |
| Sep., 2019 – Aug., 2021 | <i>M.Sc. with honors in Physics with a major in «Functional nanomaterials and advanced technologies»</i>
Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation |
| Sep., 2015 – Aug., 2019 | <i>B.Sc. in Radiophysics with a major in «Special Radio Engineering Systems»</i>
Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation |

Employment Experience

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| July, 2019 – Present | <i>Young Researcher, Research and Education Center "Smart materials and biomedical applications"</i>
Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation |
| Oct., 2021 – Present | <i>Research engineer, The Sophia Kovalevskaya North-West Mathematical Research Center</i>
Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation |
| Aug., 2022 – Present | <i>Partner relations specialist</i>
Baltic Fishing Fleet State Academy, Kaliningrad, Russian Federation |
| Aug., 2024 | <i>Instructor of the Summer Physics and Mathematics School</i>
Center for development of gifted children, Kaliningrad, Russian Federation |
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Project Experience

- July, 2019 – Oct., 2019
Team member, “Trapping, pinning, and injecting of domain wall in wire with cylindrical symmetry with diameters from submicron to few microns and control of domain wall propagation dynamics”
Ministry of Education and Science of the Russian Federation in the framework of government assignment №3.4168.2017/ПЧ
- Apr., 2021 – Dec., 2021
Team member, “Development and research of multimaterials with magnetic nanocomponents for additive 3d-5d technologies”
Russian Science Foundation (RSF); № 21-72-30032
- Feb., 2021 – Dec., 2023
Team member, “Development of a magnetic field sensor element based on a two-dimensional magnetoplasmonic crystal for point-of-care devices”
Russian Science Foundation (RSF); № 22-22-00997
- Oct., 2021 – Present
Team member, “Development of mesoscale hybrid magnetic particles for biomedical applications”
Russian Science Foundation (RSF); № 21-72-20158
- June, 2022 – Present
Team member, “Development of a magnetoplasmonic crystal-based sensor for DC and AC magnetic field detection”
Ministry of Science and Higher Education of the Russian Federation; № 075-15-2022-272
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Organizing Experience

- 18 – 22 Aug. 2019
Svetlogorsk, Russian Federation
Member of the organizing committee
International Baltic Conference on Magnetism IBCM 2019
- 29 Aug. – 2 Sept. 2021
Svetlogorsk, Russian Federation
Member of the organizing committee
Smart Composites International School SCIS 2021
- 14 – 20 Aug. 2022
Kaliningrad, Russian Federation
Member of the organizing committee
Smart Composites International School SCIS 2022
- 20 – 24 Aug. 2023
Svetlogorsk, Russian Federation
Member of the organizing committee
International Baltic Conference on Magnetism IBCM 2023
- 13 – 24 Aug. 2023
Kaliningrad, Russian Federation
Scientific Secretary:
Smart Composites International School SCIS 2023
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Peer-review Experience

Nature Research: Scientific Reports

Institute of Physics Publishing: Physica Scripta

Pleiades Publishing: Physics of Metals and Metallography, Bulletin of the Russian Academy of Sciences: Physics.

Honors

- *Best student poster presentation award in III International Baltic Conference on Magnetism 2019 entitled "Sensitivity tuning of magnetoplasmonic crystal based magnetic field sensor"*
August, 2019, Svetlogorsk, Russian Federation
 - *2020 Personal award of the Governor of the Kaliningrad region for gifted children and talented youth in the field of education, science, culture, sports, socially significant and social activities*
September, 2020 Kaliningrad, Russian Federation
 - *Gratitude for the contribution to the development of IKBFU research activities in 2020*
December, 2020 Kaliningrad, Russian Federation
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Experience

- Vibrating Sample Magnetometer (7400i System by Lakeshore);
 - X-Ray Diffractometry (AXRD Benchtop Diffractometer by Proto)
 - Scanning electron microscopy with energy dispersive X-ray spectroscopy (TM4000II by Hitachi combined with Quantax 75 by Bruker)
 - Atomic force microscopy in a semi-contact mode (Ntegra Aura by NT-MDT)
 - Kerr-microscopy (Maneto-Optical Kerr Microscope and Magnetometer, Evico magnetics)
 - FTIR spectroscopy (FT-801 by Simex, and FTIR-8400S by Shimadzu)
 - Custom optical setups made of optical and optomechanical components.
 - Visible-IR reflectance and absorbance spectroscopy
 - Visible-IR magnetic linear/circular dichroism and birefringence
 - Data processing and illustrations: Origin, Gwyddion, Adobe Photoshop and Adobe Illustrator
 - Laboratory equipment automatization: LabView
 - Basic Python skills in Python 3, utilizing the Spyder IDE.
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Patents

Invention
RU 2 796 571 C1
Issued 25 May 2023.

Method for manufacturing filament for 3d-5d printing with target magnetic properties

Conference talks

- 04 – 12 Apr. 2019
Moscow, Russian Federation
International Youth Science Forum Lomonosov-2019
Oral talk “The dependence of plasmon enhanced transversal magneto-optical Kerr effect on the surface of magnetoplasmonic crystals on the thickness of the ferromagnetic layers.”
Murzin D.V., Belyaev V.
- 23 – 26 June 2019
Prague, Czech Republic
Magnetics and Optics Research International Symposium 2019
Poster presentation “Sensitivity Tuning of Magnetic Field Sensor Based on Magnetoplasmonic Crystal”
Murzin D.V., Belyaev, V.K., Novosad V., Grunin A.A., Fedyanin, A.A., & Rodionova, V.V.
- 18 – 22 Aug. 2019
Svetlogorsk, Russian Federation
III International Baltic Conference on Magnetism 2019
Poster presentation “Sensitivity tuning of magnetoplasmonic crystal based magnetic field sensor”
Murzin D.V., Belyaev, V.K., Grunin A.A., Fedyanin, A.A., & Rodionova, V.V.
- 24 – 28 Aug. 2020
Online event
SPIE Nanoscience + Engineering. Plasmonics: Design, Materials, Fabrication, Characterization, and Applications XVIII
Poster presentation “Characterization of magnetic field sensor based on magnetoplasmonic crystal with first-order reversal curve diagrams”
Murzin D., Belyaev V., Groß F., Gräfe J., Rivas M., & Rodionova V
- 10 – 27 Nov. 2020
Online event
International Youth Science Forum Lomonosov-2020
Oral talk “Study of local and integral magnetic properties of magnetoplasmonic crystals for sensor applications”
Murzin D.V., Belyaev V.
- 7 – 11 Dec. 2020
Online event
Joint European Magnetic Symposia JEMS 2020
Poster presentation “First-order reversal diagrams method as a tool to characterize magnetoplasmonic crystal magnetic properties”
Murzin D., Belyaev V., Rivas M., Groß F., Gräfe J., Rodionova V.
- 29 Aug. – 2 Sept. 2021
Svetlogorsk, Russian Federation
IV International Baltic Conference on Magnetism 2021,
Poster presentation “Magnetic field mapping with magnetoplasmonic crystal-based sensor”
Belyaev V., Murzin D., Grunin A., Fedyanin A., Rodionova V.
- 22 – 26 Aug. 2022
Kazan, Russian Federation
VIII Euro-Asian Symposium «Trends in Magnetism»
Poster presentation “Permalloy-based two-dimensional magnetoplasmonic crystals for magnetic field sensing”
Murzin D.V., Belyaev V.K., Gritsenko Ch., Komanicky V., Rodionova V.
- 19 – 24 Sept. 2022
Krasnoyarsk, Russian Federation
All-Russian scientific conference Yenisei Photonics 2022,
Poster presentation “Plasmon-assisted enhancement of the transversal Kerr effect in two-dimensional permalloy-based magnetoplasmonic crystals for detection of orthogonal components of the magnetic field”
Murzin D.V., Belyaev V.K., Gritsenko Ch.A., Komanicky V., Rodionova V.V.
- 11 – 22 April 2022
Moscow, Russian Federation
International Youth Science Forum Lomonosov-2022,
Oral talk “Magnetic field distribution mapping with the use of a magnetoplasmonic crystal-based sensor”
Murzin D.V., Belyaev V.

- Smart Composites International School 2022
1) *Lecture* “Magnetic field sensors for biomedical applications”
Murzin D., Mapps D., Levada K., Belyaev V., Omelyanchik A., Panina L.V., Rodionova V.
- 14 – 20 Aug. 2022
Kaliningrad, Russian Federation
- 2) *Poster presentation* “Magnetic properties of 2D permalloy-based magnetoplasmonic crystals for sensing applications”
Murzin D., Belyaev V., Gritsenko Ch., Komanicky V., Rodionova V.
- Samarkand International Symposium on Magnetism 2023
Oral talk “Magnetic field topography with the use of 1D and 2D magnetoplasmonic crystals”
Murzin D.V., Belyaev V.K., Grunin A.A.2, Fedyanin A.A., Rodionova V.V.
- 2 – 6 July 2023
Samarkand, Uzbekistan
- V International Baltic Conference on Magnetism 2023
Poster presentation “Magnetic and magneto-optical properties of lamellar magnetoplasmonic crystals based on Ni₈₀Fe₂₀”
Murzin D., Belyaev V., Kern J., Kaspar C., Pernice W., Bratschisch R., Rodionova V.
- 20 – 24 Aug. 2023
Svetlogorsk, Russian Federation
- The European School on Magnetism 2023,
Poster presentation “Transversal Kerr effect enhancement in 2D magnetoplasmonic crystals for orthogonal magnetic field components detection”
Murzin D.
- 3 – 15 Sept. 2023
Online format
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Publications

2024

D. Murzin, V. Belyaev, C. Gritsenko, V. Komanicky, and V. Rodionova, “Magnetic field sensing elements based on Ni₈₀Fe₂₀ 2D magnetoplasmonic crystals,” *Sensors and Actuators A: Physical* 377, 115773 (2024). DOI: [10.1016/j.sna.2024.115773](https://doi.org/10.1016/j.sna.2024.115773)

D.V. Murzin, V.K. Belyaev, K.A. Mamian, F. Groß, J. Gräfe, A.Y. Frolov, A.A. Fedyanin, and V.V. Rodionova, “Ni₈₀Fe₂₀ thickness optimization of magnetoplasmonic crystals for magnetic field sensing,” *Sensors and Actuators A: Physical* 376, 115552 (2024). DOI: [10.1016/j.sna.2024.115552](https://doi.org/10.1016/j.sna.2024.115552)

D.V. Murzin, V.K. Belyaev, K.A. Gritsenko, and V.V. Rodionova, “Effect of Filling Factor on the Coefficient of Reflection and Transversal Kerr Effect of 2D Permalloy-Based Magnetoplasmonic Crystals,” *Bull. Russ. Acad. Sci. Phys.* 88(4), 591–596 (2024). DOI: [10.1134/S1062873823706384](https://doi.org/10.1134/S1062873823706384)

2023

K.V. Sobolev, A.S. Omelyanchik, Sh. Niaz, Z. Abbas, D.V. Murzin, and V.V. Rodionova, “Adsorptive Properties of Ti₃C₂T_x MXenes with Optimal Surface Functionalization by (–O, –F) Groups,” *Nanotechnol Russia* 18(S1), S76–S83 (2023). DOI: [10.1134/s2635167623600943](https://doi.org/10.1134/s2635167623600943)

Z.A. Grigoreva, D.V. Murzin, Ch.A. Gritsenko, A.G. Kozlov, A.V. Ognev, V.V. Rodionova, and V.K. Belyaev, “Permalloy-Based 2D-Magnetoplasmonic Crystals: Synthesis and Magneto-Optical Properties,” *Phys. Metals Metallogr.* 124(14), 1682–1688 (2023). DOI: [10.1134/s0031918x2360197x](https://doi.org/10.1134/s0031918x2360197x)

D. Murzin, V.K. Belyaev, F. Groß, J. Gräfe, N. Perov, V. Komanicky, and V. Rodionova, “Magnetic field sensing elements made of quasi-trapezoidal magnetoplasmonic crystals based on thin permalloy films,” *Journal of Magnetism and Magnetic Materials* 588, 171398 (2023). DOI: [10.1016/j.jmmm.2023.171398](https://doi.org/10.1016/j.jmmm.2023.171398)

2022

D. Murzin, V. Belyaev, J. Kern, C. Kaspar, W.H. Pernice, R. Bratschitsch, and V. Rodionova, “Transversal Kerr Effect Enhancement of Permalloy-Based Shallow Lamellar Magnetoplasmonic Crystals,” *Photonics* 9(12), 989 (2022). DOI: [10.3390/photonics9120989](https://doi.org/10.3390/photonics9120989)

D.V. Murzin, A.Yu. Frolov, K.A. Mamian, V.K. Belyaev, A.A. Fedyanin, and V.V. Rodionova, “Low coercivity magnetoplasmonic crystal based on a thin permalloy film for magnetic field sensing applications,” *Opt. Mater. Express* 13(1), 171 (2023). DOI: [10.1364/ome.478112](https://doi.org/10.1364/ome.478112)

A. Amirov, A. Omelyanchik, D. Murzin, V. Kolesnikova, S. Vorontsov, I. Musov, K. Musov, S. Khashirova, and V. Rodionova, “3D Printing of PLA/Magnetic Ferrite Composites: Effect of Filler Particles on Magnetic Properties of Filament,” *Processes* 10(11), 2412 (2022). DOI: [10.3390/pr10112412](https://doi.org/10.3390/pr10112412)

2021

A. Motorzhina, S. Jovanović, V.K. Belyaev, D. Murzin, S. Pshenichnikov, V.G. Kolesnikova, A.S. Omelyanchik, L. Gazvoda, M. Spreitzer, L. Panina, V. Rodionova, M. Vukomanović, and K. Levada, “Innovative Gold/Cobalt Ferrite Nanocomposite: Physicochemical and Cytotoxicity Properties,” *Processes* 9(12), 2264 (2021). DOI: [10.3390/pr9122264](https://doi.org/10.3390/pr9122264)

V.K. Belyaev, D. Murzin, J.C. Martínez-García, M. Rivas, N.V. Andreev, A.G. Kozlov, A.Yu. Samardak, A.V. Ognev, A.S. Samardak, and V. Rodionova, “FORC-Diagram Analysis for a Step-like Magnetization Reversal in Nanopatterned Stripe Array,” *Materials* 14(24), 7523 (2021). DOI: [10.3390/ma14247523](https://doi.org/10.3390/ma14247523)

A. Omelyanchik, V. Antipova, C. Gritsenko, V. Kolesnikova, D. Murzin, Y. Han, A.V. Turutin, I.V. Kubasov, A.M. Kislyuk, T.S. Ilina, D.A. Kiselev, M.I. Voronova, M.D. Malinkovich, Y.N. Parkhomenko, M. Silibin, E.N. Kozlova, D. Peddis, K. Levada, L. Makarova, A. Amirov, and V. Rodionova, “Boosting Magnetoelectric Effect in Polymer-Based Nanocomposites,” *Nanomaterials* 11(5), 1154 (2021). DOI: [10.3390/nano11051154](https://doi.org/10.3390/nano11051154)

2020

D. Murzin, D.J. Mapps, K. Levada, V. Belyaev, A. Omelyanchik, L. Panina, and V. Rodionova, “Ultrasensitive Magnetic Field Sensors for Biomedical Applications,” *Sensors* 20(6), 1569 (2020). DOI: [10.3390/s20061569](https://doi.org/10.3390/s20061569)

V.K. Belyaev, D.V. Murzin, A.G. Kozlov, A.A. Grunin, A.S. Samardak, A.V. Ognev, A.A. Fedyanin, M. Inoue, and V.V. Rodionova, “Engineering of optical, magneto-optical and magnetic properties of nickel-based one-dimensional magnetoplasmonic crystals,” *Jpn. J. Appl. Phys.* 59(SE), S6A08 (2020). DOI: [10.35848/1347-4065/ab71df](https://doi.org/10.35848/1347-4065/ab71df)

D.V. Murzin, V.K. Belyaev, F. Groß, J. Gräfe, M. Rivas, and V.V. Rodionova, “Tuning the magnetic properties of permalloy-based magnetoplasmonic crystals for sensor applications,” *Jpn. J. Appl. Phys.* 59(SE), S6A04 (2020). DOI: [10.7567/1347-4065/ab5e6a](https://doi.org/10.7567/1347-4065/ab5e6a)

2019

V.K. Belyaev, D.V. Murzin, N.N. Perova, A.A. Grunin, A.A. Fedyanin, and V.V. Rodionova, “Permalloy-based magnetoplasmonic crystals for sensor applications,” *Journal of Magnetism and Magnetic Materials* 482, 292–295 (2019). DOI: [10.1016/j.jmmm.2019.03.052](https://doi.org/10.1016/j.jmmm.2019.03.052)
