

Curriculae Vitae

Name: Anna N. Morozovska (a.k.a. Hanna Morozovska, a.k.a. Ганна Морозовська)

Birth date: June 29, 1977, Gender: Female

Position Title: Leading scientific researcher,

Academic Degrees: Doctor of Sciences, Doctor of Philosophy

Academic Titles: Professor, Senior Scientific Researcher

Institution: Department of Physics of Magnetic Phenomena
in the Institute of Physics in the National Academy of Sciences of Ukraine,
46, pr. Nauky, 03028 Kiyv, Ukraine,

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EDUCATION AND TRAINING

| Institution | Location | Area of study, thesis title | Degree, diploma N | Year(s) |
|---|---------------|---|---|--------------------|
| Taras Shevchenko Kiyv National University, Faculty of Physics | Kyiv, Ukraine | Undergraduate student in physics, theoretical physics, lecturer assistant Thesis title: Theory of optical autowaves | Master of Sciences, 1999 (Honor Degree in Physics) KB 11776372 | 1994-1999 |
| Taras Shevchenko Kiyv National University, Faculty of Radiophysics | Kyiv, Ukraine | Aspirant (Phd Student) in optics, laser physics. Thesis title: Photoinduced scattering processes and microdomain formation in ferroelectrics | Phd/Candidate of Sciences, 2004 (Optics, laser physics) ДК 023374 | 1999-2003 |
| Institute of Semiconductor Physics of the National Academy of Sciences of Ukraine | Kyiv, Ukraine | Postdoctoral scholar (Habilitation) in physics of dielectrics and semiconductors, solid state physics Thesis title: Local polar-active properties of ferroelectrics and formation of their nanodomain structure | Doctor of Sciences, 2009 (Solid state physics) ДД 007457 | 2006-2009 |
| Institute of Physics of the National Academy of Sciences of Ukraine | Kyiv, Ukraine | Analog of Adjuncture Scientific title (status) is Solid state physics | Senior Scientific Researcher, 2013 (Solid state physics) AC 000914 | 2010-2013 |
| Institute of Physics of the National Academy of Sciences of Ukraine | Kyiv, Ukraine | Academic Title Professor in Physics and Astronomy, order of the Ministry of Education and sciences of Ukraine 04/27/2023 No. 491 | Professor, 2023 (Physics and Astronomy, 104) АП 004970 | 2023 23/02/2023 |

RESEARCH AND PROFESSIONAL EXPERIENCE

May 2016 – present

Leading scientific researcher in the Department of Physics of Magnetic Phenomena in the Institute of physics of NAS of Ukraine, 46, pr. Nauky, 03028 Kiyv, Ukraine,

May 2012 – May 2016

Leading scientific researcher in the Sensor Irradiation Department in the Institute of physics of NAS of Ukraine, 41, pr. Nauky, 03028 Kiyv, Ukraine,

May 2009 – May 2012

Staff senior scientific researcher in the Optoelectronics Department in the Institute of semiconductor physics of NAS of Ukraine, 41, pr. Nauky, 03028 Kiyv, Ukraine,

September 2006 – April 2009

Doctorant in the Institute of semiconductor physics of NAS of Ukraine

January 2004 – September 2006

Staff scientific researcher in the Department of optic and optoelectronic recording mediums in the Institute of semiconductor physics of NAS of Ukraine, 41, pr. Nauky, 03028 Kiyv, Ukraine

MOST CITED PUBLICATIONS IN Q1 JOURNALS

1. N. Balke, S. Jesse, A.N. Morozovska, E. Eliseev, D.W. Chung, Y. Kim, L. Adamczyk, R.E. Garcia, N. Dudney and S.V. Kalinin. Nanoscale mapping of ion diffusion in a lithium-ion battery cathode. *Nature Nanotechnology* 5, 749–754 (2010). <https://doi.org/10.1038/nnano.2010.174> (607 citations)
2. Y. L. Tang, Y. L. Zhu, X. L. Ma, A. Y. Borisevich, A. N. Morozovska, E. A. Eliseev, W. Y. Wang Y. J. Wang, Y. B. Xu, Z. D. Zhang, S. J. Pennycook. Observation of a periodic array of flux-closure quadrants in strained ferroelectric PbTiO₃ films. *Science* 348, 547-551 (2015). DOI: [10.1126/science.1259869](https://doi.org/10.1126/science.1259869) (416 citations)
3. N. Balke, B. Winchester, W. Ren, Y.H. Chu, A.N. Morozovska, E.A. Eliseev, M. Huijben, R.K. Vasudevan, P. Maksymovych, J. Britson, S. Jesse, I. Kornev, R. Ramesh, L. Bellaiche, L. Q. Chen, and S.V. Kalinin. Enhanced electric conductivity at ferroelectric vortex cores in BiFeO₃. *Nature Physics* 8, 81–88 (2012). <https://doi.org/10.1038/nphys2132> (361 citations)
4. S. Jesse, B.J. Rodriguez, S. Choudhury, A.P. Baddorf, I. Vrejoiu, D. Hesse, M. Alexe, E.A. Eliseev, A.N. Morozovska, J. Zhang, L.-Q. Chen, S.V. Kalinin. Direct imaging of the spatial and energy distribution of nucleation centres in ferroelectric materials. *Nature Materials*. 7, 209–215 (2008). <https://doi.org/10.1038/nmat2114> (320 citations)
5. E.A. Eliseev, A.N. Morozovska, M.D. Glinchuk, R Blinc. Spontaneous flexoelectric/flexomagnetic effect in nanoferroics. *Physical Review B* 79, 165433 (2009). <https://doi.org/10.1103/PhysRevB.79.165433> (276 citations)
6. A. Belianinov, Qian He, A. Dziaugys, P. Maksymovych, E. A. Eliseev, A. Borisevich, A. Morozovska, J. Banys, Yu. Vysochanskii, and S. V. Kalinin. CuInP₂S₆-Room Temperature Layered Ferroelectric. *Nano Lett.* 15, 3808 (2015). <https://doi.org/10.1021/acs.nanolett.5b00491> (272 citations)
7. Young-Min Kim, A. Morozovska, E. Eliseev, M. Oxley, Rohan Mishra, T. Grande, S. Selbach, S. Pantelides, S. Kalinin, A. Borisevich. Direct observation of ferroelectric field effect and vacancy-controlled screening at the BiFeO₃/La_xSr_{1-x}MnO₃ interface. *Nature Materials*, 13, 1019–1025 (2014) <https://doi.org/10.1038/nmat4058> (248 citations)
8. S.V. Kalinin, B.J. Rodriguez, S. Jesse, E. Karapetian, B. Mirman, E.A. Eliseev, A.N. Morozovska. Nanoscale Electromechanics of Ferroelectric and Biological Systems: A New Dimension in Scanning Probe Microscopy (review). *Annual Review of Materials Research* 37, 189–238 (2007). <https://doi.org/10.1146/annurev.matsci.37.052506.084323> (246 citations)
9. E.A. Eliseev, A.N. Morozovska, G.S. Svechnikov, Venkatraman Gopalan, and V. Ya. Shur, Static conductivity of charged domain walls in uniaxial ferroelectric semiconductors. *Phys. Rev. B* 83, 235313 (2011). <https://doi.org/10.1103/PhysRevB.83.235313> (245 citations)
10. A.N. Morozovska, E.A. Eliseev, M.D. Glinchuk. Ferroelectricity enhancement in confined nanorods : Direct variational method. *Phys. Rev. B.* 73, 214106 (2006). <https://doi.org/10.1103/PhysRevB.73.214106> (192 citations)
11. A.N. Morozovska, M.D. Glinchuk, E.A. Eliseev. Phase transitions induced by confinement of ferroic nanoparticles. *Phys. Rev. B* 76, 014102 (2007). <https://doi.org/10.1103/PhysRevB.76.014102> (178 citations)

12. A.N. Morozovska, E.A. Eliseev, N. Balke, S.V. Kalinin. Local probing of ionic diffusion by electrochemical strain microscopy: spatial resolution and signal formation mechanisms. *J. Appl. Phys.* 108, 053712 (2010). <https://doi.org/10.1063/1.3460637> (177 citations)
13. A.N. Morozovska, E.A. Eliseev, M.D. Glinchuk, Long-Qing Chen, Venkatraman Gopalan. Interfacial Polarization and Pyroelectricity in Antiferrodistortive Structures Induced by a Flexoelectric Effect and Rotostriction. *Phys. Rev.B.* 85, 094107 (2012). <https://doi.org/10.1103/PhysRevB.85.094107> (118 citations)
14. E.A. Eliseev, S.V. Kalinin, S. Jesse, S.L. Bravina, A.N. Morozovska. Electromechanical Detection in Scanning Probe Microscopy: Tip Models and Materials Contrast. *J. Appl. Phys.* 102, 014109 (2007). <https://doi.org/10.1063/1.2749463> (105 citations)

RECENT 5 PUBLICATIONS

1. A.N. Morozovska, E. A. Eliseev, Yevhen M. Fomichov, Yulian M. Vysochanskii, Victor Yu. Reshetnyak, and Dean R. Evans. Controlling the domain structure of ferroelectric nanoparticles using tunable shells. *Acta Materialia*, 183, 36-50 (2020) <https://doi.org/10.1016/j.actamat.2019.11.012>
2. A.N. Morozovska, E. A. Eliseev, R. Hertel, Y. M. Fomichov, V. Tulaidan, V. Yu. Reshetnyak, and D. R. Evans. Electric Field Control of Three-Dimensional Vortex States in Core-Shell Ferroelectric Nanoparticles. *Acta Materialia*, 200, 256–273 (2020) <https://doi.org/10.1016/j.actamat.2020.09.003>
3. E. A. Eliseev, A.N. Morozovska, R. Hertel, H. V. Shevliakova, Y. M. Fomichov, V. Yu. Reshetnyak, and D. R. Evans. Flexo-Elastic Control Factors of Domain Morphology in Core-Shell Ferroelectric Nanoparticles: Soft and Rigid Shells. *Acta Materialia*, 212, 116889 (2021) <https://doi.org/10.1016/j.actamat.2021.116889>
4. Anna N. Morozovska, Sergei V. Kalinin, Mykola E. Yeliseiev, Jonghee Yang, Mahshid Ahmadi, Eugene A. Eliseev, and Dean R. Evans. Dynamic control of ferroionic states in ferroelectric nanoparticles. *Acta Materialia* **237**, 118138 (2022), <https://doi.org/10.1016/j.actamat.2022.118138>
5. Ulises Acevedo-Salas, Boris Croes, Yide Zhang, Olivier Cregut, Kokou Dodzi Dorkenoo, Benjamin Kirbus, Ekta Singh, Henrik Beccard, Michael Lukas M. Eng, Riccardo Hertel, Eugene A. Eliseev, Anna N. Morozovska, Salia Cherifi-Hertel. Impact of 3D curvature on the polarization orientation in non-Ising domain walls. *Nano Letters* 23, 3, 795–803 (2023) <https://doi.org/10.1021/acs.nanolett.2c03579>

Monography: J. Banys, A. Dziaugys, K. E. Glukhov, **A. N. Morozovska**, N. V. Morozovsky, Yulian M. Vysochanskii. [Van der Waals Ferroelectrics: Properties and Device Applications of Phosphorous Chalcogenides](#) (John Wiley & Sons, Weinheim 2022) 400 pp. ISBN: 978-3-527-35034-6

Scientific metrics and profiles: *h* index - 67 by Google Scholar, 56 by Scopus, 55 by WoS, >10 000 total citations, ORCID ID <https://orcid.org/0000-0002-8505-458X>, SCOPUS Author ID: 6602682668, <https://www.scopus.com/authid/detail.uri?authorId=6602682668>, ResearcherID [W-8385-2018](https://www.webofscience.com/wos/author/record/W-8385-2018), <https://www.webofscience.com/wos/author/record/W-8385-2018>

SUPERVISION OF STUDENTS AND FELLOWS

2010 – present. 3 PhDs defended, 5 Master Degrees defended

2017. - O.V. Varenkyk successfully defended PhD dissertation in the Institute of Physics of National Academy of Science of Ukraine

2019 - C.M. Scherbakov successfully defended PhD dissertation at the Faculty of Physics, Taras Shevchenko Kyiv National University

2021 - H.V. Shevliakova, successfully defended PhD dissertation at the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

SYNERGISTIC ACTIVITIES

Research: analytical theory finite size, surface and correlation effects in ferroics and multiferroics, including ferroelectrics, ferromagnetics, magnetoelectrics and related materials, mixed ionic-electronic conductors

International Awards:

2016 - Scopus Awards Ukraine 2016 for Young Scientists (Supported by Ministry of Education and Science of Ukraine)

2018 - Web of Science Award Ukraine 2018 (in the category of highly cited researchers)

2022 - US Department of Energy, Office of Science, Basic Energy Sciences, Award Number DE-SC0020145 as part of the Computational Materials Sciences Program

Scholarly:

2010 – 2022. Lecturer in the Taras Shevchenko Kiyv National University. Topics of the special courses are “Size effects in nanomaterials” and “Synergetics”.

2017 – present. Lecturer for PhD students in the Institute of Physics of NASU, with a special course “Hierarchy of solid bodies struture”.

INTERNATIONAL GRANTS

SFFR of Ukraine– NSF, 2009-2011 yrs., project № UU30/004 (DMR-0908718) “New approaches to the study of the structure and local dynamics of the domain walls at the nanoscale” (RESEARCHER)

NAS of Ukraine — STCU, 2012-2013 yrs., project № 5514 “Development of multifunctional ferroelectric-ferromagnetic nanograin ceramics based on SrTiO₃ quantum dielectric for use in micro/nanoelectronics” (RESEARCHER)

HORIZON 2020, 2018-2023 yrs., Research and Innovation Staff Exchanges (RISE) project №778070, “Transition metal oxides with metastable phases: a way towards superior ferroic properties” (KEY PERSON from the Institute of Physics, NAS of Ukraine)

STCU — EOARD, 2019 – 2023 yrs., project N P751, P751a – “Controlling ferroelectricity in nanosized core-shell type particles”. A partnership project with the European Bureau of Aerospace Research and Development (European Office of Aerospace Research and Development project 9IOE063) (PRINCIPAL INVESTIGATOR)

CNMS 2021 – 2022 yrs., Proposal ID: CNMS2021-B-00843 Project Title: Effect of surface ionic screening on polarization reversal scenario in antiferroelectric thin films: analytical theory, machine learning, PFM and cKPFM experiments. (PRINCIPAL INVESTIGATOR)

DFG-NFRU, 2019-2022 yrs., Bilateral Project “Cooperative kinetics of defects and domain structures in ferroelectrics. DFG project number 405631895, NFRU project number Ф81/41481 (PRINCIPAL INVESTIGATOR IN UKRAINE)

NATO Science for Peace and Security (SPS) Programme, 2023-2025 yrs., Grant G5980 “Flexible Nano-Ferroelectrics for Rapid Cooling of Combat Electronics (FRAPCOM)” (PARTNER COUNTRY PROJECT DIRECTOR)

Horizon Europe Framework Programme (HORIZON-TMA-MSCA-SE), 2023-2028, project № 101131229, Piezoelectricity in 2D-materials: materials, modeling, and applications

2018-2022, (KEY PERSON from the Institute of Physics, NAS of Ukraine)

26 September, 2023



(Ганна Морозовська)