Dr. Farida Tatardar

Associate Professor | Head of the Department of Physics and Electronics
Khazar University, Baku, Azerbaijan

CONTACT INFORMATION

- **Email:** farida.tatardar@khazar.org
- **Google Scholar:** https://scholar.google.com/citations?user=lY_gnx8AAAAJ
- **ORCID:** https://orcid.org/0000-0002-5587-3314
- **ResearchGate:** https://www.researchgate.net/profile/Farida-Tatardar

EDUCATION

Institute of Physics, Azerbaijan National Academy of Sciences — Baku, Azerbaijan
- Ph.D. in Physics — 2017
Baku State University — Baku, Azerbaijan
Master of Science (MSc) in Physics- 2008
Specialization: Physics of Biological Systems
Bachelor of Science (BSc) in Physics- 2006
Specialization: Physics

EXPERIENCE

Khazar University — Baku, Azerbaijan
Head of the Department of Physics and Electronics
School of Science and Engineering | 2021 – Present
Khazar University — Baku, Azerbaijan
Lecturer of Physics
Department of Physics and Electronics, School of Science and Engineering
February 2014 – Present
Institute of Physics, Azerbaijan National Academy of Sciences (ANAS) — Baku, Azerbaijan
Leading Researcher
Laboratory of Physics of Polymer Nano- and Active Composites
September 2008 – 2022

POSTDOCTORAL RESEARCH EXPERIENCE

University of A Coruña (Universidade da Coruña) — Ferrol, Spain
Postdoctoral Researcher | 2005
Research Institution: CITENI – Research Centre for Naval and Industrial Technologies, Ferrol Industrial Campus
Research Topic:
Process–Structure–Property–Performance Relationships in FDM 3D-Printed PVDF/ZnO/MWCNT Electroactive Nanocomposites for Hybrid Triboelectric–Piezoelectric Energy Harvesting
Research Supervisor: Professor Ana Ares-Pernas

INTERNATIONAL RESEARCH EXPERIENCE

Fudan University — Shanghai, China
International Research Project | April 2026 – March 2028
Participating in a two-year international research project funded by the Shanghai Science and Technology Commission (Grant No. 26HB2700300).
Project Title: Development and Signal Decoupling of High-Performance Piezoelectric Extended-Gate Thin-Film Transistors for Proximity/Contact Full-Process Perception
Research Stay: Completed a three-month research stay at Fudan University, Shanghai, China, in 2026.

RESEARCH INTERESTS

Focused on the design and development of nanocomposites and hybrid composites for advanced applications Investigation of nanoparticle immobilization and functionalization to enhance material performance Study of piezoelectric effects in composite systems for energy harvesting and sensing

Research on electro-acoustic and acousto-electric transducers for signal conversion and sensing applications Development of fiber-reinforced nanocomposites with enhanced multifunctional properties Exploration of 3D-printed sensors and smart materials for biomedical and engineering applications.

RESEARCH PROJECTS AND GRANTS

Science Fund Project Competition of the State Oil Company of the Republic of Azerbaijan (SOCAR)
Project Period: September 2019 – September 2020
Project Title: Addition and Correlation in Graphene, Fullerene, and Other Topological Nanostructures
Role: Project Manager

Science Development Foundation under the President of the Republic of Azerbaijan
Project No.: EİF-KETPL-2-2015-1(25)-56/01/1-M-01
Project Title: Low-Dimensional Spin–Orbit Effects and Additive Effects in Semiconductors and Superconductors
Approval Date: 28 October 2016
Role: Project Participant

Science Development Foundation under the President of the Republic of Azerbaijan
Project No.: EIF-BGM-2-BRFTF-1-2013-07/01/1-M-06
Project Title: Investigation of Crazing Effects in Polyether Fibres and Films
Approval Date: 26 August 2013
Role: Project Participant

PUBLICATIONS

Selected Publications

Y. Feng, H. Wu, W. Zhao, D. Liu, F. Tatardar, L. Parali, G. Zhu. Synergetic Enhancement of Piezoelectric P(VDF-TrFE) Devices toward Weak Signal Perception. ACS Applied Electronic Materials, 2026, Vol. 8, Issue 2. https://doi.org/10.1021/acsaelm.5c02329

Q. Salamat, F. Tatardar, V. Fatalieva, M. Soylak. Fibre Bio-Nanocomposites and Their Applications in Environmental Chemistry. International Journal of Environmental Analytical Chemistry, 2026. https://doi.org/10.1080/03067319.2026.2621946

M. Zhang, W. Li, C. Zhao, D. Liu, F. Tatardar, L. Parali, A. Guliakova, G. Zhu. Optoelectrical Stacked Dielectric-Gated Organic Thin Film Transistors for Artificial Synaptic Simulation. Organic Electronics, 2026, Vol. 153, Article 107413. https://doi.org/10.1016/j.orgel.2026.107413

C. Zhao, J. Xu, W. Li, S. Liu, R. Liu, F. Tatardar, L. Parali, A. A. Guliakova, G. Zhu. From Proximity to Contact Perception of Piezoelectric Extended-Gate Amorphous Oxide Thin Film Transistors. ACS Applied Materials & Interfaces, 2026, Vol. 18, Issue 18, pp. 26448–26461. https://doi.org/10.1021/acsami.6c00084

K. Jodat Asl, A. Naseri, M. Amjadi, S. M. Seyyed Alavi, A. Pariz, F. Tatardar, F. Rasoulzadeh. Nanozymatic Platform for Dual Colorimetric and Fluorimetric Sensing of H_2O_2 and Glucose Using Ni-$CoWO_4$ Nanoparticles. Scientific Reports, 2026, Vol. 16, Article 27190. https://www.nature.com/articles/s41598-026-58001-3

M. Koç, V. Skoumal, L. Parali, J. Pechoušek, A. Sarı, A. Jančář, F. Tatardar. The Effect of Gamma-Irradiation on Piezoelectric Properties of PVDF/ZnO@Fe-Based Piezoelectric Nanogenerators. Journal of Materials Science: Materials in Electronics, 2026, Vol. 37, Article 1916. https://doi.org/10.1007/s10854-026-18234-4

F. Tatardar, A. Ares-Pernas, A. Lasagabaster-Latorre, Z. Yıldız, B. Combarro, M. J. Abad, L. Parali. Process–Structure–Property–Performance Relationships in FDM 3D-Printed PVDF/ZnO/MWCNT Electroactive Nanocomposites for Hybrid Triboelectric–Piezoelectric Energy Harvesting. Polymer, 2026, Vol. 365, Article 130708. https://www.sciencedirect.com/science/article/pii/S0032386126011559

C. Zhao, W. Zeng, S. Liu, W. Li, H. Wu, A. A. Guliakova, F. Tatardar, Q. Zhang, G. Zhu. Temperature-Dependent Charge Transport and Polarization Modulation in P(VDF-TrFE)/IZO Ferroelectric Thin-Film Transistors. ACS Applied Materials & Interfaces, 2026, Vol. 18, Issue 40, pp. 55072–55085. https://doi.org/10.1021/acsami.6c11707

S. Adeli, A. A. Fathi, M. A. Farajzadeh, M. Nikbakhtan, M. Nemati, M. R. Afshar Mogaddam, S. Khiali, F. Tatardar. Extraction of Indomethacin from Plasma Based on $V_2O_5{\cdot}1.6H_2O$ Sorbent Using Dispersive Solid Phase Extraction Method Prior to HPLC-MS/MS Determination. Journal of Chromatography A, 2026, Vol. 1787, Article 467441. https://doi.org/10.1016/j.chroma.2026.467441

E. Karakulak, L. Parali, M. Koç, F. Tatardar, A. Sarı, E. Mevsima, V. Fataliyeva. Enhanced Piezoelectric Performance of Multilayered Piezoelectric Nanogenerator Based on the PVDF/PZT/Graphene Electrospun for IoT-Based Remote Monitoring. Surfaces and Interfaces, 2025, Vol. 75, Article 107809. https://doi.org/10.1016/j.surfin.2025.107809

M. Koç, S. Guluzade, F. Tatardar, N. N. Musayeva, A. Sarı, L. Parali. The Piezoelectric Nanogenerators Based on PVDF/$BaTiO_3$/MWCNT Ternary Composite Prepared by the Electrospinning Method. Journal of Materials Science, 2025, Vol. 60, pp. 25481–25503. https://doi.org/10.1007/s10853-025-11872-9

L. Parali, F. Tatardar, M. Koç, N. Musayeva, A. Sarı, R. Moradi. The Piezoelectric Response of Electrospun PVDF/PZT Incorporated with Pristine Graphene Nanoplatelets for Mechanical Energy Harvesting. Journal of Materials Science: Materials in Electronics, 2024, Vol. 35, Article 41. https://doi.org/10.1007/s10854-023-11798-5

M. N. Mirzayev, G. T. Imanova, D. Neov, M. Rasul, I. R. Bekpulatov, F. K. Khallokov, E. P. Popov, K. Hasanov, S. Ismayilova, B. Mauyey, D. M. Mirzayeva, F. Tatardar, M. Dinu, G. Kaminski, A. Vladescu. Surface Evaluation of Carbonitride Coating Materials at High Temperature: An Investigation of Oxygen Adsorption on Crystal Surfaces by Molecular Dynamics Simulation. Journal of Materials Science: Materials in Electronics, 2024. https://doi.org/10.1007/s10934-024-01627-3

M. Koç, F. Tatardar, N. Musayeva, S. Guluzade, A. Sarı, L. Parali. The Piezoelectric Properties of Three-Phase Electrospun PVDF/PZT/Multiwalled Carbon Nanotube Composites for Energy Harvesting Applications. Journal of Alloys and Compounds, 2024, Vol. 1003, Article 175578. https://www.sciencedirect.com/science/article/pii/S0925838824021650

B. Suleymanli, E. Nakhmedov, O. Alekperov, F. Tatardar, B. Tanatar. The Diagrammatic Method of Berezinskii for One-Dimensional Disordered Wire with Spin-Orbit Interaction. Physica E: Low-Dimensional Systems and Nanostructures, 2023. https://ui.adsabs.harvard.edu/abs/2023PhyE.14615550S/abstract

F. N. Tatardar, M. A. Kurbanov, I. S. Ramazanova, G. K. Guliyeva, A. Nuraliyev, Z. A. Dadashov. New Materials for the Electromechanical and Acoustoelectric Transducers. Ferroelectrics, 2023, Vol. 606, Issue 1, pp. 30–38. https://doi.org/10.1080/00150193.2023.2189840

B. Suleymanli, E. Nakhmedov, F. Tatardar, B. Tanatar. Motion of Two-Dimensional Quantum Particle Under a Linear Potential in the Presence of Rashba and Dresselhaus Spin–Orbit Interactions. Solid State Communications, 2022, Vol. 342, Article 114582. https://doi.org/10.1016/j.ssc.2021.114582

E. Nakhmedov, B. D. Suleymanli, O. Z. Alekperova, F. Tatardar, H. Mammadov, A. Konovko, A. M. Saletsky, Y. M. Shukrinov, K. Sengupta, B. Tanatar. Josephson Current Between Two p-Wave Superconducting Nanowires in the Presence of Rashba Spin-Orbit Interaction and Zeeman Magnetic Fields. Physica C: Superconductivity and its Applications, 2020, Vol. 579, Article 1353753. https://www.sciencedirect.com/science/article/abs/pii/S0921453420302495

M. A. Kurbanov, F. N. Tatardar, N. A. Safarov, I. S. Ramazanova, Z. A. Dadashev, I. A. Faradzhzade, K. K. Azizova, A. F. Gochueva. New Technology of High-Sensitivity Ferro/Piezoelectric Materials Based on Micro- and Nanostructured Hybrid Polymers. Technical Physics, 2019, Vol. 64, No. 5, pp. 693–697. https://doi.org/10.1134/S1063784219050116

E. Nakhmedov, E. Nadimi, S. Vedaei, O. Alekperov, F. Tatardar, A. I. Najafov, I. I. Abbasov, A. M. Saletsky. Vacancy Mediated Magnetization and Healing of a Graphene Monolayer. Physical Review B, 2019, Vol. 99, Article 125125. https://doi.org/10.1103/PhysRevB.99.125125

N. A. Safarov, F. N. Tatardar, S. S. Amirov. The Hybrid Composites-Based New Materials for the Electromechanical and Acoustico-Electrical Converters. Journal of Non-Oxide Glasses, 2017, Vol. 9, No. 1, pp. 19–23. https://chalcogen.ro/19_SafarovNA.pdf

E. Nakhmedov, O. Alekperov, F. Tatardar, Y. M. Shukrinov, I. Rahmonov, K. Sengupta. Effect of Magnetic Field and Rashba Spin-Orbit Interaction on the Josephson Tunneling Between Superconducting Nanowires. Physical Review B, 2017, Vol. 96, Article 014519. https://doi.org/10.1103/PhysRevB.96.014519

Certificates, Training and Academic Recognition

2025 – Certificate of Postdoctoral Research, Industrial Campus of Ferrol, University of A Coruña, Spain (20 June – 20 September 2025).

2025 – Certificate of Participation as an Invited Speaker, International Pharmaceutical Sciences Congress, Famagusta, North Cyprus (14 May 2025).

2024 – Certificate of Appreciation for sharing scientific knowledge and expertise through the lecture "Electrospun Nanofibers and Their Applications: Energy Harvesting", Khazar Nanotechnology Webinar Series, Nano BioAnalytical Chemistry Center (25 December 2024).

2024 – Certificate of Participation, Spanish Study Visit, Erasmus+ 3E-Partnership Project: European Energy Efficiency towards Mutually Reinforcing Partnership with Georgia, Azerbaijan and Ukraine (6–7 November 2024).

2024 – Certificate of Participation, Study Visit at Politecnico di Milano, Milan, Italy, Erasmus+ 3E-Partnership Project (6–8 October 2024).

2024 – Certificate of Participation, Study Visit at KU Leuven, Ghent, Belgium, Erasmus+ 3E-Partnership Project (11–12 September 2024).

2023 – Certificate of Completion, "Skills for the Future" Mentorship Programme, Innovation Center of the State Agency for Citizen Service and Social Innovation under the President of the Republic of Azerbaijan.

2022 – Certificate of Appreciation, Dunya IB School Science Fair.

2020 – Certificate of Recognition, awarded the honorary title of Notable Researcher, Khazar University.

2017–2018 – Certificate of Completion, "Development of Interactive Teaching Materials Based on Learning Outcomes", Khazar University.

2015 – Certificate of Completion, "Textbook Preparation and Evaluation", Khazar University.

International and National Conferences

2026 - X International Scientific Conference of Young Researchers, Baku Engineering University (BEU), Baku, Azerbaijan, 22–23 May 2026.

2025 – JIRheo 2025: Reunión de Jóvenes Investigadores en Reología, 11–12 September 2025.

2025 – International Pharmaceutical Sciences Congress, Famagusta, North Cyprus, 14 May 2025 (Invited Speaker).

2024 – Khazar Nanotechnology Webinar Series, Nano BioAnalytical Chemistry Center, 25 December 2024 (Invited Lecturer).

2023 – III Interdisciplinary Conference on Mechanics, Computers and Electrics, Istanbul, Türkiye, 21–22 October 2023.

2023 – 3rd Republican Scientific Conference dedicated to the 100th Anniversary of National Leader Heydar Aliyev, “Current Issues of Personnel Training in the Energy Sector”, Hadrut, Azerbaijan, 17 November 2023.

2022 – International Conference named after Academician Latif Imanov, Shusha, Azerbaijan, September 2022.

2022 – International Conference named after Emil Shakhtakhtinsky, Nakhchivan, Azerbaijan, October 2022.

2015 – 5th International Conference on Control and Optimization with Industrial Applications, Baku, Azerbaijan, 27–29 August 2015.

2014 – 1st International Scientific Conference of Young Scientists and Specialists, “The Role of a Multidisciplinary Approach in Solving Current Problems of Applied Sciences”, Baku, Azerbaijan.

2012 – 10th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity (RCBJSF-10), Yokohama, Japan.

2011 – 11th International Symposium on Ferroic Domains and Micro- to Nanoscopic Structures, Ekaterinburg, Russia.

2010 – International Conference “Electroceramics XII”, Trondheim, Norway.

2010 – 7th Asian Meeting on Ferroelectricity and 7th Asian Meeting on Electroceramics, Korea.

2010 – Congress and Exhibition on Advanced Materials and Processes, “Materials Science and Engineering”, Darmstadt, Germany, 24–26 August 2010.

LANGUAGE SKILLS

- Azerbaijani: Native
- English: B1–B2 (CEFR)
- Russian: Intermediate
- Turkish: Advanced