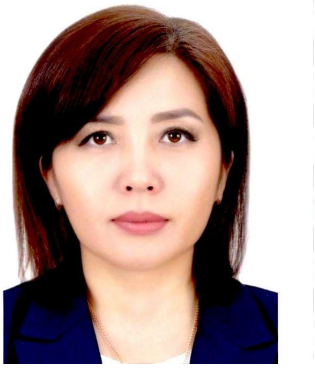
# Curriculum Vitae



**Full name**

Baimoldanova Lazat Sarkytbekkyzy

Email: baimoldals@gmail.combaimoldals@gmail.com

**Position and department**

Associate Professor, Department of Physics and Technology
Sarsen Amanzholov East Kazakhstan University (Non-Profit Joint-Stock Company)

**Education**

1999–2004 — S. Amanzholov East Kazakhstan State University, Physics; qualification: Engineer-Physicist.
2006–2008 — S. Amanzholov East Kazakhstan State University, Physics; qualification: Master of Physics.
2017–2020 — D. Serikbayev East Kazakhstan State Technical University, doctoral programme in Technical Physics.

**Academic degree**

Doctor of Philosophy (PhD) in Technical Physics, programme code 6D072300.

Dissertation defended on 18 June 2021.

**Academic title**

—

**Professional experience**

Total professional experience: 21 years, including 16.5 years of research and teaching experience.

**Courses taught**

Mechanics; Molecular Physics and Thermodynamics; Electricity and Magnetism; Methods of Teaching Physics; Selected Topics in Electricity and Optics; Academic Writing; Academic Writing Practice and Research Methodology; Research Methods.

**Research interests**

Solid-state and surface physics; multicomponent nitride and carbonitride coatings, including TiSiCN and (TiAlSiY)N/CrN; formation of their structural and phase states and physical and mechanical properties; reactive plasma spraying and preliminary mechanical activation of powders; effects of ion implantation on microstructure and elemental distribution; tribological, corrosion and high-temperature properties of protective coatings.

Physics teaching methodology in schools and higher education; development of experimental and research skills; assessment of learning outcomes; development of students’ soft skills; digital technologies and personalised physics teaching in inclusive education.

## Publications

### Articles in international journals

1. Rakhadilov B., Bayandinova M., Abilkalykova R., Satbayeva Z., Baimoldanova L. Correlation Between Radiation Damage Evolution and Mechanical Properties of Fe-Irradiated Tungsten // Materials. — 2026. — Vol. 19. — Article 4540. — DOI: 10.3390/ma19214540.

2. Baimoldanova L.S., Rakhadilov B.K. Properties and Microstructure of TiSiC- and TiSiCN-Based Coatings Produced by RPS // Crystals. – 2025. – Vol. 15, No. 12. – Article 1029. – 16 p. – DOI: 10.3390/cryst15121029.

3. Baimoldanova L.S., Rakhadilov B.K., Kengesbekov A., Kuanyshbai R. Influence of Mechanical Activation on the Evolution of TiSiCN Powders for Reactive Plasma Spraying // Crystals. – 2024. – Vol. 14, No. 11. – Article 1005. – DOI: 10.3390/cryst14111005.

4. Pogrebnjak A.D., Buranich V.V., Ivashchenko V.I., Baimoldanova L.S., Rokosz K., Raaen S., Zukowski P., Opielak M., Rakhadilov B.K., Beresnev V.M., Erdybaeva N.K. The Effect of Substrate Treatment on the Properties of TiAlSiYN/CrN Nanocomposite Coatings // Surfaces and Interfaces. – 2022. – Vol. 30. – Article 101902. – DOI: 10.1016/j.surfin.2022.101902.

5. Maksakova O.V., Pogrebnjak A.D., Buranich V.V., Ivashchenko V.I., Baimoldanova L.S., Rokosz K., Raaen S., Malovana N. Theoretical and Experimental Investigation of Multilayer (TiAlSiY)N/CrN Coating Before and After Gold Ions Implantation // High Temperature Material Processes. — 2021. — Vol. 25, No. 1. — P. 57–70. — DOI: 10.1615/HighTempMatProc.2021038087.

6. Pogrebnjak A.D., Kong C.H., Webster R.F., Tilley R.D., Takeda Y., Oyoshi K., Bondar O.V., Buranich V.V., Konstantinov S.V., Baimoldanova L.S., Opielak M., Zukowski P., Konarski P. Antibacterial Effect of Au Implantation in Ductile Nanocomposite Multilayer (TiAlSiY)N/CrN Coatings // ACS Applied Materials & Interfaces. — 2019. — Vol. 11. — P. 48540–48550. — DOI: 10.1021/acsami.9b16328.

### Articles in scientific journals of Kazakhstan

7. Baimoldanova L.S., Rakhadilov B.K., Sakenova R.E., Azhibayeva M.A. Formation of the Nanocomposite Structure of TiSiCN Coatings During Reactive Plasma Spraying // Science and Technology of Kazakhstan. — 2026. — No. 1. — P. 221–239. — DOI: 10.48081/BGQF1920.

8. Baimoldanova L.S., Rakhadilov B.K., Çoruh A., Kabdykeneva E.M., Yermolenko M.V. Tribological, Corrosion and Thermal Properties of TiSiCN Coatings Produced by Reactive Plasma Spraying // Bulletin of Shakarim University. Technical Sciences. — 2026. — No. 2 (22). — P. 524–532. — DOI: 10.53360/2788-7995-2026-2(22)-56.

9. Baimoldanova L.S., Abilkalykova R.B. Effect of Vacuum-Arc Deposition on the Structure and Service Properties of (TiAlSiY)N/CrN Coatings // Science and Technology of Kazakhstan. — 2026. — No. 3.

10. Baimoldanova L.S., Pogrebnjak A.D., Seitakhmetova Zh.M., Kabdykeneva E.M. Theoretical Study of the Thermodynamic Mixing Energy and Structural Characteristics of Nanocomposite (TiAlSiY)N/CrN Coatings // Problems of the Evolution of Open Systems. — 2025. — No. 1 (27). — DOI: 10.26577/JPEOS20252712.

11. Baimoldanova L.S., Pogrebnjak A.D., Bayandinova M.B., Sakenova R.E. Structural and Phase Transformations in Nanolayered (TiAlSiY)N/CrN Coatings Following Gold Ion Implantation // Bulletin of Shakarim University. Technical Sciences. — 2025. — No. 3 (19). — P. 525–533. — DOI: 10.53360/2788-7995-2025-3(19)-59.

12. Baimoldanova L.S., Rakhadilov B.K., Bayandinova M.B. Optimisation of Mechanical Activation Parameters for the Formation of Functional Coatings Based on TiSiCN Powders // Bulletin of the National Nuclear Center of the Republic of Kazakhstan. — 2025. — No. 3.

13. Baimoldanova L.S., Pogrebnjak A.D., Sakenova R.E., Bektasova G.S. Microstructural Changes and Elemental Distribution in (TiAlSiY)N/CrN Coatings Following $Au^-$ Ion Implantation // Science and Technology of Kazakhstan. — 2025. — No. 4. — DOI: 10.48081/SFBX2679.

14. Sakenova R.E., Baimoldanova L.S., Pogrebnjak A.D. Nanoscale Architecture of Nanocomposite Coatings Based on (CrN/ZrN)/(Cr/Zr) // Bulletin of the National Nuclear Center of the Republic of Kazakhstan. — 2025. — No. 4. — P. 142–149. — DOI: 10.52676/1729-7885-2025-4-142-149.

15. Baimoldanova L.S., Rakhadilov B.K., Kengesbekov A., Kusainov A., Maulit A. A Brief Review of TiSiCN Coating Deposition Techniques and Reactive Plasma Spraying // Bulletin of the National Nuclear Center of the Republic of Kazakhstan. — 2024. — No. 1. — P. 13–23. — DOI: 10.52676/1729-7885-2024-1-13-23.

16. Effects of Gold Ion Implantation and Interphase Boundaries on the Microstructure, Elemental Composition and Mechanical Characteristics of Nanolayered (TiAlSiY)N/CrN Coatings // Bulletin of KazNRTU. — 2020. — No. 3 (139). — P. 704–711. Co-authors: Pogrebnjak O.D., Kong Ch., Uazyrkhanova G.K.

17. Elemental Redistribution in a Multilayer (TiAlYSi)N/CrN Coating Following Gold Implantation // Bulletin of D. Serikbayev East Kazakhstan State Technical University. — 2020. — No. 2 (88). — P. 76–81. Co-authors: Uazyrkhanova G.K., Gritsenko B.P., Sabiyeva M.K.

18. Effects of Microstructure and Interphase Boundaries on the Tribological Properties of Nanocomposite (TiAlSiY)N/CrN Coatings // Bulletin of D. Serikbayev East Kazakhstan Technical University. — 2020. — No. 4 (90). — P. 66–72. Co-authors: Pogrebnjak A.D., Uazyrkhanova G.K., Yerbolatova G.U.

19. Study of the Effects of Alternating Layers on the Structural and Mechanical Properties of Composite (TiAlSiY)N/CrN Coatings // Bulletin of D. Serikbayev East Kazakhstan State Technical University. — 2019. — No. 4 (86). — P. 67–72. Co-authors: Pogrebnjak O.D., Uazyrkhanova G.K.

20. Microstructure of Multilayer and Multielement Coatings Based on (TiAlSiY)N/CrN // Bulletin of D. Serikbayev East Kazakhstan State Technical University. — 2018. — No. 4 (82). — P. 72–77. Co-authors: Uazyrkhanova G.K., Erdybaeva N.K., Pogrebnjak O.D.

**Conference publications**

21. Baimoldanova L.S., Sakenova R.E. Comparative Analysis of the Structure and Properties of TiSiC and TiSiCN Coatings Produced by Reactive Plasma Spraying // Proceedings of the International Scientific and Practical Conference “XVIII Toraigyrov Readings”. — Pavlodar, 23 October 2026.

22. Sakenova R.E., Baimoldanova L.S. A Method for Producing Nanostructured Coatings Based on (CrN/ZrN)/(Cr/Zr) // Proceedings of the International Scientific and Practical Conference “XVIII Toraigyrov Readings”. — Pavlodar, 23 October 2026.

23. Effect of $Au^-$ Ions Implantation on the Microstructure, Mechanical and Tribological Properties of Nanocomposite Coatings (TiAlSiY)N/CrN // Advanced Materials Manufacturing and Research: New Technologies and Techniques (AMM&R2021). — D. Serikbayev East Kazakhstan Technical University, online, 2021. Co-authors: Pogrebnjak A.D., Uazyrkhanova G.K., Bektasova G.S.

24. A Scientific Review of the Properties of Multilayer Coatings and the Formation of Alternating Layers // Proceedings of the International Scientific and Practical Online Conference “Energy- and Resource-Saving Technologies: Experience and Prospects”. — Korkyt Ata Kyzylorda State University, 29 April 2020. Co-author: Uazyrkhanova G.K.

25. Study of the Structure and Properties of Nanocomposite Coatings Using Ion Implantation // Proceedings of the VI International Scientific and Technical Conference “Youth Creativity for the Innovative Development of Kazakhstan”. — Ust-Kamenogorsk: D. Serikbayev East Kazakhstan State Technical University, 2020. Co-authors: Uazyrkhanova G.K., Gritsenko B.P.

26. Nano-multilayered coatings of (TiAlSiY)N: influence of the alternating layer on their structural and mechanical properties // Materials of the International scientific-technical conference “The Role of Universities in Creating an Innovative Economy”, dedicated to the 60th anniversary of D. Serikbayev EKSTU. — Ust-Kamenogorsk, 26 September 2018. — P. 321–328. Co-authors: Pogrebnjak A.D., Kravchenko Ya.O., Coy L.E., Iatsunskyi I., Uazyrkhanova G.K.

27. Structure of Multilayer and Multielement Coatings Based on (TiAlSiY)N/CrN Produced by Vacuum-Arc Deposition // Proceedings of the International Scientific and Practical Conference “Ualiyev Readings–2018: Trends in the Development of Science and Education in the Modern World”. — Ust-Kamenogorsk: S. Amanzholov East Kazakhstan State University, Berel Publishing House, 2018. — Vol. 2. — P. 179–183. Co-authors: Uazyrkhanova G.K., Rakhadilov B.K., Kantay N.

28. The microstructure and mechanical properties of (TiAlSiY)N nanostructured coatings // 2017 IEEE 7th International Conference on Nanomaterials: Applications & Properties (NAP 2017). — Odessa, Ukraine, 10–15 September 2017. — P. 01FNC13-1–01FNC13-4. Co-authors: K.V. Smyrnova, O.V. Bondar, S.O. Borba-Pogrebnjak, Ya.O. Kravchenko, V.M. Beresnev. Baimoldanova L.S. Changes in the Properties of Nanocomposite TiAlSiYN/CrN Coatings Following Gold Ion Implantation. — 2022.

### Monograph

Baimoldanova L.S. Changes in the Properties of Nanocomposite TiAlSiYN/CrN Coatings Following Gold Ion Implantation. — 2022.

### Utility model patent

29. Multilayer Protective Coating // Utility Model Patent of the Republic of Kazakhstan No. 5824, IPC C23C 14/00. — Published on 5 February 2021, Bulletin No. 5. Co-authors: Pogrebnjak A.D., Rakhadilov B.K., Uazyrkhanova G.K.

### Certificates of state registration of copyright

30. Omirkhan M., Imanzhanova K.T., Baimoldanova L.S. “Methodology for Integrating Physics Teaching and Scientific Research” (computer program). — Certificate of State Registration of Copyright, Republic of Kazakhstan, No. 52960, dated 25 December 2024.

31. Nurlan M., Imanzhanova K.T., Baimoldanova L.S. “Effective Teaching of the Fundamentals of Dynamics Using Artificial Intelligence Platforms” (computer program). — Certificate of State Registration of Copyright, Republic of Kazakhstan, No. 52959, dated 25 December 2024.

32. Manakova D.K., Imanzhanova K.T., Baimoldanova L.S. “Integrated Use of UFE in the Technical and Vocational Education and Training System” (computer program). — Certificate of State Registration of Copyright, Republic of Kazakhstan, No. 52844, dated 20 December 2024.

33. Baimoldanova L.S. “Demonstration Experiments in Physics: An Electronic Study Guide” (computer program). — Certificate of State Registration of Copyright, Republic of Kazakhstan, No. 51102, dated 5 November 2024.

34. Baimoldanova L.S., Bektasova G.S. “Methods for Developing Thinking and Intelligence in Physics Education: An Electronic Study Guide” (computer program). — Certificate of State Registration of Copyright, Republic of Kazakhstan, No. 50045, dated 30 September 2024.

35. Bektasova G.S., Yerbolatova G.U., Baimoldanova L.S. “A Collection of Worked Examples and Test Problems in Mechanics in the QR Program” (computer program). — Certificate of State Registration of Copyright, Republic of Kazakhstan, No. 49958, dated 25 September 2024.