

Full Name:
Rimma Erbolatkyzy Sakenova
Position (Department):
Head of the Department of Physics and Technologies, Sarsen Amanzholov East Kazakhstan University.
Educational Background:

- 2002–2006 – Sarsen Amanzholov East Kazakhstan State University, Bachelor's degree in Physics and Informatics;
- 2012–2014 – Sarsen Amanzholov East Kazakhstan State University, Master's degree in Physics;
- 2017–2020 – D. Serikbayev East Kazakhstan State Technical University, Doctoral studies in Technical Physics.
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Academic Degree:
Doctor of Philosophy (PhD).

Academic Title:
Associate Professor of the Department of Physics and Technologies.

Teaching Experience:
20 years.

1. 2006–2007 – Laboratory Assistant at the Laboratory of Information and Communication Technologies, Sarsen Amanzholov East Kazakhstan State University – 1 year.
2. 2007–2008 – Engineering Technician at the Laboratory for Software Development and Maintenance and Network Administration, Center for Information Technologies, Sarsen Amanzholov East Kazakhstan State University – 1 year.
3. 2012–2014 – Engineering Technician at the Center for Information Technologies, Sarsen Amanzholov East Kazakhstan State University – 2 years.
4. 2014–2015 – Lecturer at the Department of Physics, Sarsen Amanzholov East Kazakhstan University (Non-Profit Joint-Stock Company) – 1 year.
5. 2016–2017 – Senior Lecturer at the Department of Physics – 1 year.
6. 2017–2018 – Part-time Lecturer at the Department of Technical Physics and Materials Science, School of Information Technologies and Energy, D. Serikbayev East Kazakhstan State Technical University – 1 year.
7. 2017–2018 – Junior Researcher at D. Serikbayev East Kazakhstan State Technical University – 1 year.
8. 2017–2019 – Senior Lecturer at the Department of Physics and Technologies, Sarsen Amanzholov East Kazakhstan State University – 2 years.

9. 2018–2020 – Part-time Lecturer at the Department of Technical Physics and Materials Science, School of Information Technologies and Energy, D. Serikbayev East Kazakhstan State Technical University – 2 years.

10. 2020–2021 – Senior Lecturer at the Department of Physics, Sarsen Amanzholov East Kazakhstan University (Non-Profit Joint-Stock Company) – 1 year.

11. 2021–2026 – Head of the Department of Physics and Technologies and Associate Professor at the Department of Physics and Technologies, Sarsen Amanzholov East Kazakhstan University (Non-Profit Joint-Stock Company) – 3 years.

Courses Taught:

Atomic and Nuclear Physics, Methods and Technologies of Physics Teaching, Fundamentals of Nuclear Fuel Production, Physics Problem-Solving Workshop, Structural Materials for Fusion Reactors, Methods of Teaching Solid State Physics Using Artificial Intelligence, Innovative Teaching Technologies for Specialized Physics Courses, Fundamentals of Commercialization of Research Results, Selected Chapters in Electricity and Optics.

Research Interests:

Atomic and nuclear physics, technical physics, condensed matter physics, physics and materials science of nanostructured materials. Research into the structure, phase composition, and physical and mechanical properties of multilayer and nanocomposite coatings based on transition metal nitrides (CrN, ZrN, MoN). Development and investigation of protective coatings; study of diffusion, microsegregation, and ion implantation processes; and the effects of radiation and plasma exposure on the structure and properties of materials. Vacuum arc and ion-plasma deposition techniques. Additional research interests include modern physics teaching technologies, innovative educational approaches, and the application of artificial intelligence in education.

Publications and Scientific Articles:

1. O.V. Maksakova, R. F. Webster, R. D. Tilley, V. I. Ivashchenko,

B. O. Postolnyi, O. V. Bondar, Y. Takeda, V. M. Rogoz, R.E.Sakenova,

P.V. Zukowski, M. Opielak, V. M. Beresnev, A.D. Pogrebnjak Nanoscale Architecture of (CrN/ZrN)/(Cr/Zr) Nanocomposite Coatings: Microstructure, Composition, mechanical properties and first-principles calculations. Journal of Alloys and Compounds . – March 2020. – Vol.831. – P. 154808-1-154808-15. IF=4,65, Quartile – Q2, Percentile – 91. https://doi.org/10.1016/j.jallcom.2020.154808;

2. A.D. Pogrebnjak, R.F. Webster, R.D. Tilley, V.V. Buranich, V.I. Ivashchenko,Y. Takeda, K. Oyoshi, K. Piotrowska, P.Zukowski, R.E.Sakenova, P. Konarski, A. Kupchishin Formation of Si-Rich interfaces by Radiation-induced Diffusion and Microsegregation in CrN/ZrN Nanolayer Coating. ACS Applied Materials and Interfaces. – April 2021. – Vol.1, pp. A-K, S1-S4. IF=8,456, Quartile – Q1, Percentile – 94

https://doi.org/10.1021/acsami.0c19451;

3. Fedor M. Noskov, Ludmila I. Kveglis, Artur K. Abkaryan, R.E.Sakenova The Structure of Lenticular Crystals Formed in Plastically Deformed Titanium Nickelide. Crystals 2022, 12, 145. https://doi.org/10.3390/cryst12020145;

4. Fedor M. Noskov c, Lyudmila I. Kveglis, Vyacheslav I. Mali, Maksim A. Esikov, R.E.Sakenova Investigation of the Processes of Structure Formation during Explosion Welding of Copper and Molybdenum. Crystals 2023, 13, 1514. https://doi.org/10.3390/cryst13101514

1. Р.Е.Сакенова, Погребняк А.Д., Ердыбаева Н.К., Қылышқанов М.Қ. Кремний иондарымен имплантталған CrN/ZrN/Cr/Zr наноқұрылымды жабындағы диффузия және микросегрегация процестері/ Д.Серікбаев атындағы Шығыс Қазақстан мемлекеттік университетінің хабаршысы, №1.(91). – 2021. – б.175-180, Өскемен қ.;

2. М.Б. Лесков, Л.И. Квеглис, П.О. Шалаев, Э.И. Якушевский, Р.Е.Сакенова. Исследование структуры слоистых образцов медь–молибден, полученных сваркой взрывом, и построение 3D-модели фрактальных элементов новой структуры/ Журнал Сибирского федерального университета. Техника и технологии 2022, 15(8): 962–974;

3. Rakhadilov, B.K., Bayatanova, L.B., Satbayeva, Z.A., Kozhanova, R.S., Yerbolatova, G.U., Sakenova R.Y. Investigation of changes in phase composition and tribological properties of 65G steel during electrolyte-plasma hardening/ Bulletin of the Karaganda university

Physics series. № 3(111)/2023 DOI 10.31489/2023PH3/119-127;

4. М. Б. Лесков, Л. И. Квеглис, О. А. Масанский, Р.Е.Сакенова. Возникновение локализованных микрообластей при экстремальных воздействиях в марганцовистых сталях/ Успехи прикладной физики, 2023, том 11, № 6 Физическое материаловедение

DOI: 10.51368/2307-4469-2023-11-6-515-521;

5. Л. С. Баймолданова, Б. К. Рахадилов, М. А. Ажибаева, Сакенова Р.Е. Формирование нанокомпозитной структуры покрытий TISICN при реактивном плазменном напылении/ Научный журнал Торайгыров университета «Наука и техника Казахстана». ISSN 2788-87706, №1, 2026;

6. А. Д. Погребняк, Л. С. Баймолданова, Р.Е.Сакенова. Нанокомпозитті (CrN/ZrN)/(Cr/Zr) негізіндегі жабындардың наноөлшемді архитектурасы/ ҚР ҰЯО Жаршысы. Қазақстан Республикасы ұлттық ядролық орталығының мерзімдік ғылыми-техникалық журналы 4(104) шығарым, желтоқсан, 2025 жыл;

7. Л.С. Баймолданова, А.Д. Погребняк, Баяндинова М.Б., Р.Е.Сакенова. Структурно-фазовые превращения в нанослоистых покрытиях (TIALSIY)N/CRN после ионной имплантации ионами золота/ Научный журнал «Вестник Университета Шакарима. Серия технические науки», № 3 (19) 2025;

8. Л.С. Баймолданова, А.Д. Погребняк, Р.Е. Сакенова, Г.С.Бектасова. Микроструктурные изменения и элементное распределение в покрытиях (TiAlSiY)N/CrN после имплантации ионами Au^-/ Научный журнал Торайгыров университета «Наука и техника Казахстана». ISSN 2788-87706, №1, 2026.

1. Монография. Сакенова Р.Е./ Кремний иондарымен имплантталған CrN/ZrN/Cr/Zr наноқұрылымды жабынды зерттеу әдістері. С.Аманжолов атындағы ШҚУ «Берел» баспасы, 2022 ж.;

2. Оқу құрал. Р.Е.Сакенова/Физиканың эксперименттік және теориялық әдістері. С.Аманжолов атындағы ШҚУ «Берел» баспасы, 2022 ж.;

3. Оқу құрал. Р.Е.Сакенова/Наноқұрылымды жабындарды алу әдістері. С.Аманжолов атындағы ШҚУ «Берел» баспасы, 2023 ж.;

Оқу құрал. К.Т.Иманжанова, С.Б.Тохтарова, Р.Е.Сакенова/ Механика мен молекулалық физика бөлімінен тарихи мазмұнды есептер жинағы.

1. Патент на изобретение №34722. Опубликован 20.11.2020. г. Нур-Султан. Қатты жабындыны вакуумды-доғалық ионды-плазмалық тұндыру тәсілі.

Соавтор: А.Д. Погребняк, Н.К. Ердыбаева,М.Қ. Қылышқанов,О. Максакова,Б.К. Рахадилов