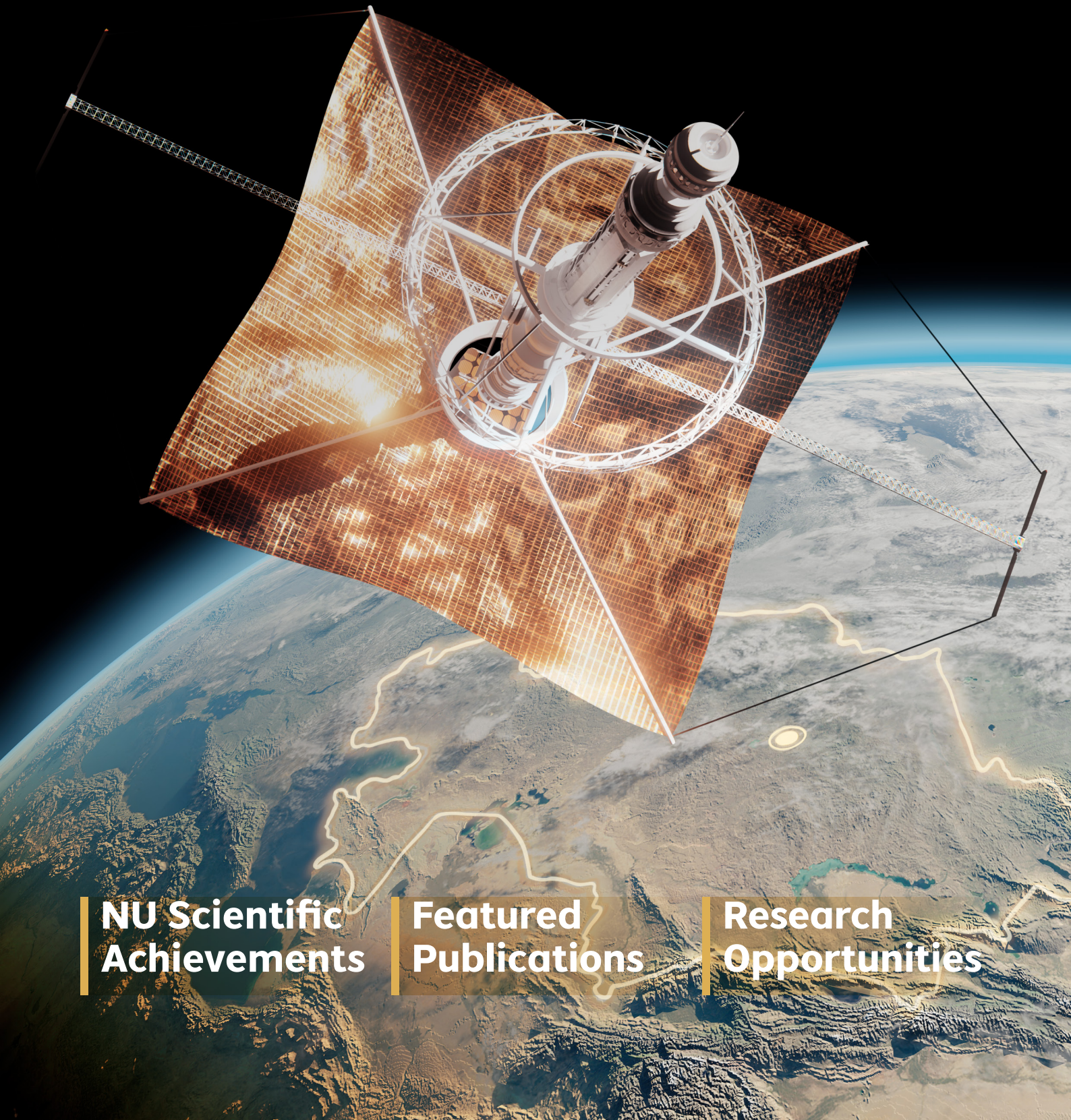




RESEARCH NEWSLETTER

ISSUE 51 | JULY - SEPTEMBER 2026



**NU Scientific
Achievements**

**Featured
Publications**

**Research
Opportunities**



Achieves Second Consecutive 100-Place Rise in Global Rankings

#376-400

**World
University
Rankings 2027**



**Times
Higher
Education**

TOP 17.4%
of universities worldwide

84.1
Research Quality Score

#1

University in Central Asia,
CIS, Caucasus



Dear NU Community,

It is with great pleasure that I share that Nazarbayev University has achieved another outstanding result in the **Times Higher Education World University Rankings 2027**, continuing our upward trajectory among the world's leading universities. This year, NU has advanced by a further 100 places to the band **376-400**, marking our **second consecutive year of a 100-place improvement** in the rankings. We are now positioned within the top 17.4% of universities worldwide, a significant milestone that reflects the growing global recognition of our institution and the quality of its work.

Particularly encouraging is the fact that NU has recorded **improvements across four ranking pillars**: research quality, teaching, research environment, and industry. This demonstrates progress across the full spectrum of our academic and research activities.

Our strongest-performing pillar continues to be **Research Quality (score 84.1)**, highlighting the increasing influence and impact of the research produced by our faculty and researchers. In this measure, NU's performance is comparable to that of globally recognized institutions such as the University of Geneva (#163), University of Arizona (#139), and University of Rochester (#136).

We are also pleased to maintain our position among the leading universities in our region. NU is ranked **#1 among universities in the CIS** - a noteworthy improvement from 4th position last year. It is also encouraging to see broader growth across our national higher education landscape, with a record 10 Kazakhstani universities featured in the THE rankings this year.

While rankings are only one measure of success, they provide an important external assessment of our performance relative to peer institutions globally. This latest result demonstrates that the strategic investments we have made in teaching, research, innovation and international engagement are yielding tangible outcomes.

Most importantly, this achievement belongs to the entire NU community. It reflects the commitment and hard work of **our faculty, students, staff and alumni**, whose contributions advance the University's mission and reputation. I would like to express my sincere gratitude to all members of our community for your dedication, ambition and support.

*Warm regards,
Professor Waqar Ahmad,
President of Nazarbayev
University*

Globally Connected Internationally Recognized

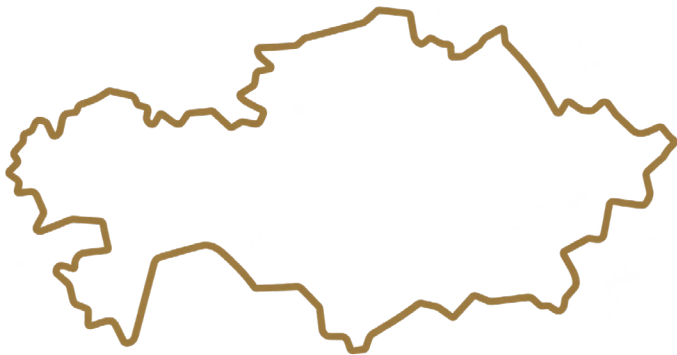


44
NU researchers among
the world's **Top 2%**
most-cited scientists
2024

NU Publications are cited
3.1x
times the world average

A Leading Contributor To Kazakhstan's Research Excellence In 2023-2025

11 **RESEARCH
CENTERS**
Advancing research across
five strategic areas to create
knowledge, solutions and
impact



60.2%
of NU publications involve
international collaboration

136
countries represented in
NU research collaborations

3376
Institutions collaborating
with NU



15%
of Kazakhstan's
publications

24%
of Kazakhstan's
Q1 publications

28%
of Kazakhstan's
Top 10% journal
publications

216
Externally funded projects
in 2025
+26%
Up from 2023

+24%
Growth in student
Research participation
since 2023



4161
PUBLICATIONS

Total number of publications



43.7B_{KZT}
**TOTAL
RESEARCH
FUNDING**

Internal and external
research funding



27.9B_{KZT}
**EXTERNAL
RESEARCH
FUNDING**

From national and
international sources



15.3B_{KZT}
**RESEARCH
INFRASTRUCTURE
INVESTMENT**

Research centers,
equipment, facilities, and
services



2187
**STUDENTS
ENGAGED IN
RESEARCH**

Students participating in
research

Editorial

An Autumn Season

The editorial team of Nazarbayev University Research Administration is pleased to present the 51st issue of our quarterly newsletter, with contributions from faculty, researchers, laboratories, schools and research support units across the university.

Every research story begins with a question. Understanding why that question matters, how it is investigated and what remains unresolved brings us closer to the work itself. This issue of the NU Research Newsletter explores that process across energy, engineering, health, education and society. Together, these stories offer a view of research as a shared undertaking, shaped by scientific curiosity, technical expertise and collaboration.

Our feature on the NURA Machine Shop introduces the people and capabilities that turn designs into physical prototypes.

In Behind the Research, we meet teams developing next-generation solar technologies, investigating materials for cleaner water and examining how universities prepare teachers for inclusive classrooms.

The Research Snapshot section brings individual publications into focus. Studies of student trust in artificial intelligence, underground carbon storage and the mechanisms associated with epilepsy illustrate the range of questions being investigated at NU.

Across the issue, student research, international partnerships and scientific gatherings reveal how knowledge develops through exchange. We would like to thank the researchers, students and colleagues who have shared their work. We invite readers to discover an unfamiliar field, ask a new question and find a potential collaborator within these pages.

Editorial team

Ainur Zhumasheva

Research Translation
& Managing Editor

Rollan Alimgazy

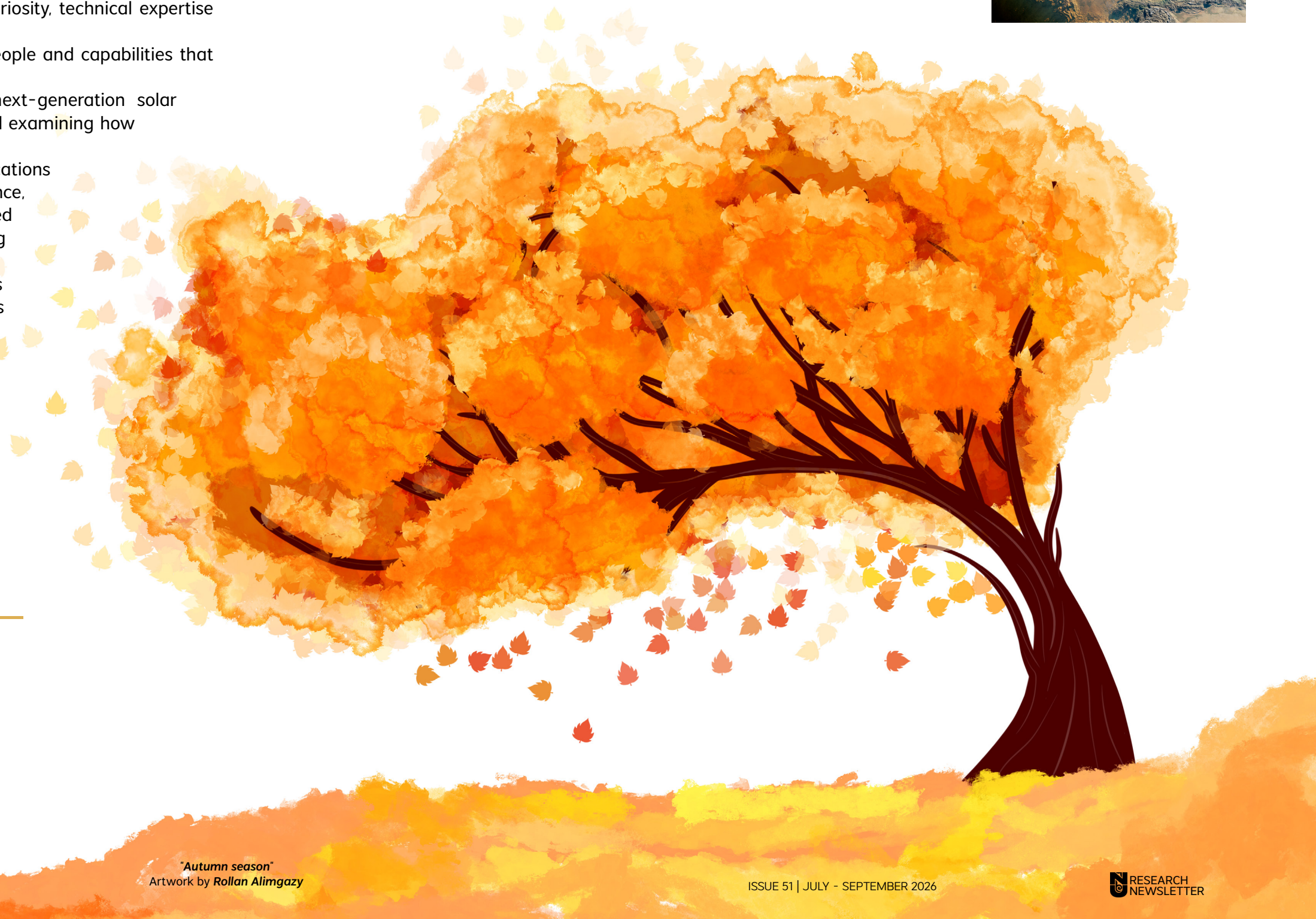
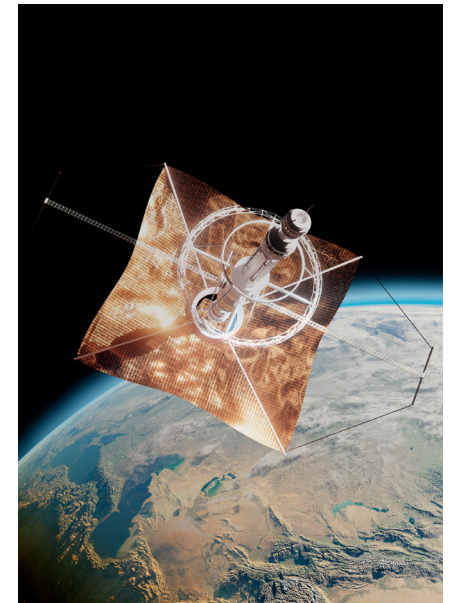
Layout Designer &
Graphic Artist

ON THE COVER

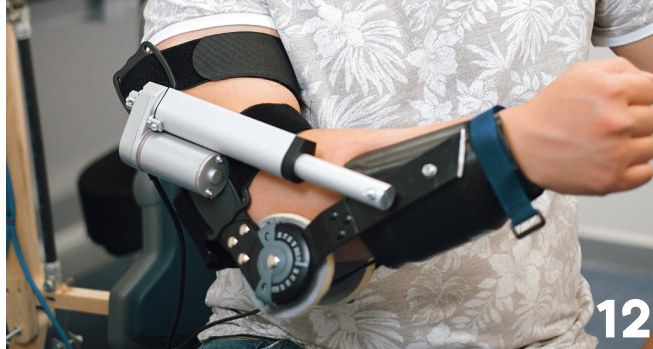
A 3D Concept image of a futuristic spacecraft with a deployed solar panel "sails", orbiting the Earth over Kazakhstan.

The main idea behind this render was to visualize one of the research topics – specifically, solar panels of the future, such as third-generation photovoltaic materials and organic solar cells. This 3D image signifies Kazakhstan's potential and prospects for the future research and development of subsequent projects in the field of space technologies.

Artwork by **Rollan Alimgazy**. Modeled, rendered and composed in Blender3D.



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12 NURA Machine Shop

The **NURA Machine Shop** is an engineering and manufacturing facility within the Nazarbayev University Research Administration (NURA). It supports NU researchers, students, faculty members, startup teams, and Technopark residents in transforming engineering ideas into practical solutions.

Spotlight on Success

21 Professor Naureen Durrani wins 2026 AUA Scholars Award

Professor Naureen Durrani has won the Asian Universities Alliance Scholars Award 2026, supporting a research collaboration with Dr Kevin Kester, Seoul National University. The award will enable Professor Durrani to spend ten working days at Seoul National University, where the two researchers will develop a comparative programme of research on education, gender, peacebuilding and social transformation.



22 Design, Modeling and Adaptive Control of a Low-Cost Reusable Rocket

Nazarbayev University's MSc student Tangirbergen Manarbekuly designed, built, and successfully launched low-cost guided rocket. The primary objective was to develop and experimentally validate technologies for the modeling, navigation, and control of rocket systems using modern design methods and accessible electronic components.

24 Genetic Determinants of Coronary Artery Disease in Type 2 Diabetes Mellitus Among Asian Populations

This study aimed to understand whether inherited genetic differences may affect the risk of coronary artery disease in Asian people with type 2 diabetes. We reviewed evidence from studies and compared genetic variants found in people with and without coronary artery disease. The results suggest that there is no single "risk gene." Instead, cardiovascular risk appears to be influenced by multiple genetic variants.

27 NU Research Team Received Patent For A Physics-Informed Neural Network Method

The team received Kazakhstan utility model patent No. 12814 to model emulsion displacement in a heterogeneous porous medium. The method jointly predicts pressure, phase saturation, mobile emulsion concentration, retained emulsion, and effective permeability as coupled space-time fields.



Behind the Research

29 Advancing Next-Generation Photovoltaic Technologies at NU

Crystalline silicon photovoltaics remain the dominant solar technology. However, conventional silicon modules are generally rigid, opaque, and bulky. In contrast, third-gen photovoltaics can be manufactured using lower-temperature, solution-based thin-film deposition techniques. This enables lightweight and flexible solar modules and other innovative designs that can be further integrated into various products.

34 Building Inclusive Teaching Capacity: The Role of Initial Teacher Education in Kazakhstan

Kazakhstan is rapidly expanding inclusive education, but initial teacher education is still adapting from a post-Soviet tradition in which many learners were educated through separate specialist provision. The project examines how universities prepare pre-service teachers for this transition and where segregated assumptions continue to shape expectations.



37 Turning Local Resources and Waste into Materials for Cleaner Water

Clean water depends on technologies that can remove toxic metals, persistent organic contaminants, and harmful microorganisms without creating excessive cost or environmental burden. The research addresses this challenge by converting locally available minerals and biomass residues into functional adsorbents and catalyst supports. This work is especially relevant to Kazakhstan, where water scarcity, mining and industrial activities, and the need for resource-efficient treatment place pressure on water quality.

40 A Study of Western-Style Universities and the Making of Higher Education Hubs in Kazakhstan and Uzbekistan

Although Kazakhstan and Uzbekistan have implemented substantial reforms, existing evidence remains fragmented and is primarily focused on institutional rhetoric. The research will evaluate whether these institutions foster sustainable academic communities, reinforce indigenous institutions, and produce measurable outcomes in innovation, employability, knowledge spillovers, and regional development.



42

Research Snapshot

43 Organic Solar Cells for Space: Why Device Design Matters

Conventional solar cells are primarily based on silicon (Si) semiconductors and have been commercially produced for decades. Although widely used, silicon solar cells have limitations in weight, flexibility, and manufacturing cost. Emerging alternatives, such as perovskite and organic solar cells, offer the potential for lightweight, flexible, and affordable devices that deliver more power per unit of weight.

46 Student AI Resistance in Kazakhstan

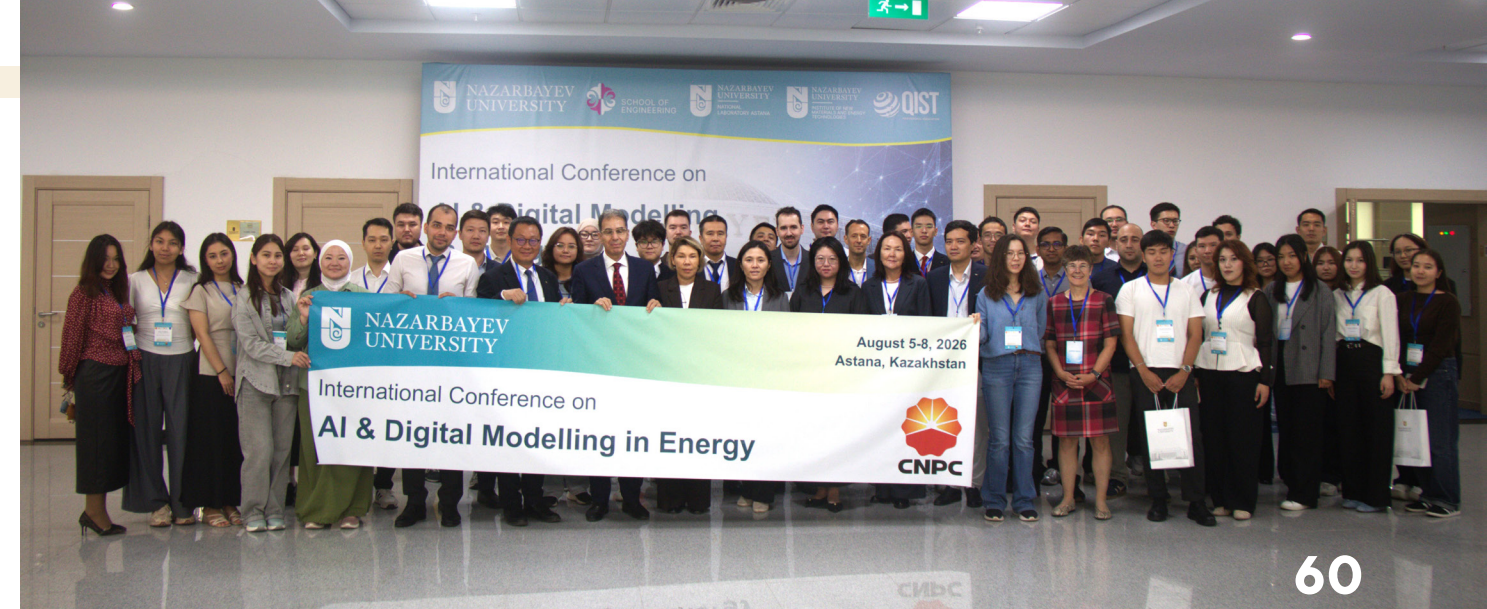
Universities are rapidly promoting generative AI for personalized learning and assessment, yet this often rests on the assumption that students will accept it once its usefulness becomes clear. This gap matters across Kazakhstan, Central Asia and the wider international research community because misreading student trust could undermine the sustainability of AI adoption policies in higher education.

48 Predicting How CO2 Is Trapped Underground

Long-term geological CO2 storage depends on knowing how much injected carbon remains mobile and how much becomes dissolved, residually trapped, or mineralized. The study addresses this gap with a faster, physics-guided approach relevant to evaluating saline-aquifer storage options worldwide, including emerging carbon-management projects in Kazakhstan and Central Asia.

50 Political Instability, Governance Failure, and the Emerging Migration Paradigm in Pakistan

Political instability and weak governance can drive skilled citizens to leave their countries, creating serious consequences for human capital and institutional development. This study addresses a gap in migration research by examining how political grievances, institutional distrust, and governance failures influence migration beyond economic motivations.



60

52 Seizure Threshold Management in Drug-Resistant Epilepsy

Drug-resistant epilepsy affects about one-third of people with epilepsy. Standard treatment mainly targets the immediate excitatory/inhibitory imbalance, but many patients remain without stable seizure control. Our review asks whether three interconnected processes, neuroinflammation, oxidative stress and mitochondrial dysfunction, should be considered together as additional contributors to a persistently low seizure threshold.

54 Mentoring For Well-Being In Language Teacher Education

Language teachers' well-being is increasingly shaped by institutional demands-evaluation frameworks and competing priorities. Existing research on teacher well-being often treats institutional policy and everyday practice separately, leaving unclear how or if the two connect. This study explores how language teacher well-being is shaped through institutional discourses and mentoring relationships.

56 More Autonomy, New Identity? The Story of Kazakhstan's Regional Universities

Regional universities are often overlooked despite their important role in regional development and workforce preparation. The Kazakhstan experience shows that meaningful autonomy requires adequate resources, effective governance, and academic participation, not simply legislative change.

Opportunities & Publications

76 Research Funding Opportunities

Four Nazarbayev University programmes for international collaboration, new faculty, doctoral research and industry partnerships.

78 External Research Funding Opportunities

We are pleased to share a curated list of international research funding opportunities that may be of interest to you. All listed opportunities have been pre-checked by Pre-award Operations Office of NURA and are open to applications from Nazarbayev University

82 NU Library Research Support Hub

Nazarbayev University Library is pleased to announce the launch of the NU Research Data Repository (RDR), as well as the celebration of International Open Access Week, held from 19 to 23 October 2026 under the theme "The Cost of Knowledge."

85 New Research Publications

Nazarbayev University publications indexed in Scopus in 2026 span a wide range of disciplines, reflecting the diversity and interdisciplinary strength of the University's research community.

Conferences and Events

60 AIDME-2026 International Conference on AI & Digital Modeling in Energy

AIDME-2026 connected researchers using artificial intelligence, digital modelling, and computational science across the energy value chain. Under the theme "Connecting Science, AI & Energy Worldwide," participants examined how physics-based, data-driven, and hybrid approaches can improve scientific understanding, prediction, design, and optimisation while maintaining reliability, interpretability, validation, and scientific rigour.

64 INESS-2026 14th International Conference on Nanomaterials and Advanced Energy Storage Systems

INESS-2026 was organized to bring together leading researchers, industry experts, and young scientists to discuss recent advances in nanomaterials and energy storage technologies. The event focused on innovative materials, next-generation batteries, electrochemical energy storage, and emerging technologies, addressing key challenges in performance, safety, sustainability, and the development of advanced energy-storage systems.

68 ICMR 2026 23rd International Conference on Manufacturing Research

ICMR 2026 brought researchers, academics, and industry leaders together to exchange knowledge on advanced and digital manufacturing engineering. Celebrating its 40th anniversary, the conference focused on how emerging technologies, including additive manufacturing, AI-driven automation, and Industry 4.0, can transform manufacturing into a driver of economic growth.



68

NURA

Machine Shop

Engineering Ideas Into Reality



iD **Bekzat Tilegen,**
Head of Experimental
Workshop, NURA

“

Our goal is to develop the Machine Shop as an engineering platform where researchers, students, and technology teams can progress from an idea and a digital model to a real physical prototype. It is important for us not only to deliver manufacturing solutions, but also to build engineering capabilities, support research projects, and create an environment in which new ideas can be put into practice.”

Engineering Ideas Into Reality



@machineshop_nura



machineshop@nu.edu.kz



The **NURA Machine Shop** (Experimental Workshop) is an engineering and manufacturing facility within the Nazarbayev University Research Administration (NURA). It supports NU researchers, students, faculty members, startup teams, and Technopark residents in transforming engineering ideas into practical solutions.

Projects may begin with an initial concept, sketch, 3D model, or complete technical documentation. Machine Shop specialists assess manufacturability, refine the proposed design, select appropriate production methods, and support the project through fabrication, assembly, testing, and delivery.

Design and
Consulting



Prototyping and
Manufacturing



Training and
Development



Research Support



Innovation and
Creativity



Cooperation with
Residents



Engineering Capabilities

The Machine Shop Provides A Broad Range Of Engineering And Manufacturing Services, Including:

- 3D Modelling And Preparation Of Technical Documentation
- Reverse Engineering Of Existing Parts And Assemblies
- CAD/CAM Programming And Manufacturing Process Planning
- Multi-Axis CNC Turning And Milling
- Laser Cutting And Sheet-Metal Bending
- MIG/MAG And TIG Welding
- Additive Manufacturing And 3d Printing
- Powder Coating, Finishing, And Assembly

The team works with Siemens NX / NX CAM, SolidWorks, Mastercam, and Fusion 360. These capabilities are particularly valuable for experimental equipment, custom mechanisms, robotic systems, research installations, and one-off prototypes.



IDEA



DESIGN



PROTOTYPING



MANUFACTURING



ASSEMBLY



RESULT

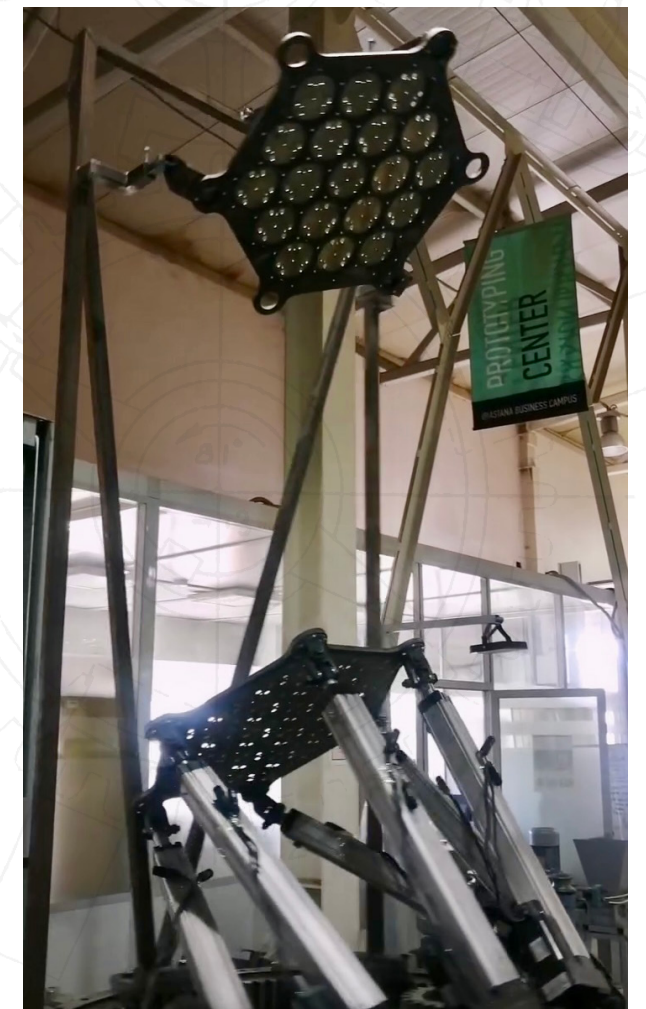
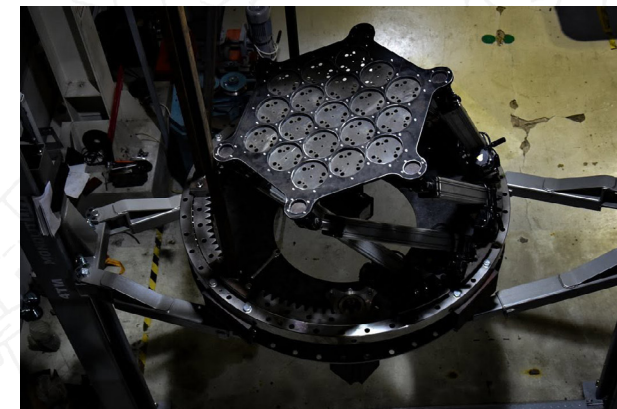


Research In Practice

High-Speed Stationary Astronomical Telescope

The Machine Shop provided engineering and manufacturing support for a research project led by Professor Christos Spitas of the School of Engineering and Digital Sciences.

For the telescope's moving platform, the team developed technical documentation and manufactured complex components, including a large-diameter gear, shafts, bearing housings, and structural elements. The work involved high-precision CNC machining on a five-axis machining centre, followed by assembly and commissioning support.



Rehabilitation Exoskeleton

For another School of Engineering and Digital Sciences project, the team developed a prototype robotic exoskeleton for the arm and shoulder joint, designed for research in rehabilitation and mobility enhancement.

Machine Shop specialists contributed to the mechanical design, 3D models and drawings, materials selection, component fabrication, and prototype assembly. The project combined machining, laser cutting, bending, welding, and powder coating.



This robotic system is unique in its ability to automatically adjust joints and provide the necessary forces during therapy, ensuring natural arm and shoulder movements.

The hybrid exoskeleton mechanism with 5 degrees of freedom comprises a proximal module with 2 degrees of freedom and a distal TPMP module with 3 degrees of freedom. This structure combines serial and parallel links to enhance the system's workspace and rigidity. The support structure features adjustable axes, enabling its use for either arm.

The shoulder girdle mechanism comprises rigid support links with actuation units that enable lifting/lowering and protraction/retraction movements. It features two active rotational degrees of freedom and one passive prismatic degree of freedom, providing full active assistance to patients.

The cable-driven parallel shoulder module consists of two platforms connected by cables that simulate spherical joints. This provides three degrees of rotational freedom for the shoulder joint. The design is lightweight and does not require alignment with the anatomical shoulder joint, as it utilizes the human shoulder as the base structure.



Humanoid Robot Shoulder Joint

The Machine Shop also manufactured high-precision aluminium components for the shoulder joint of a humanoid robot. Because of their complex geometry, the parts required five-axis machining on a DMU 50 machining centre.



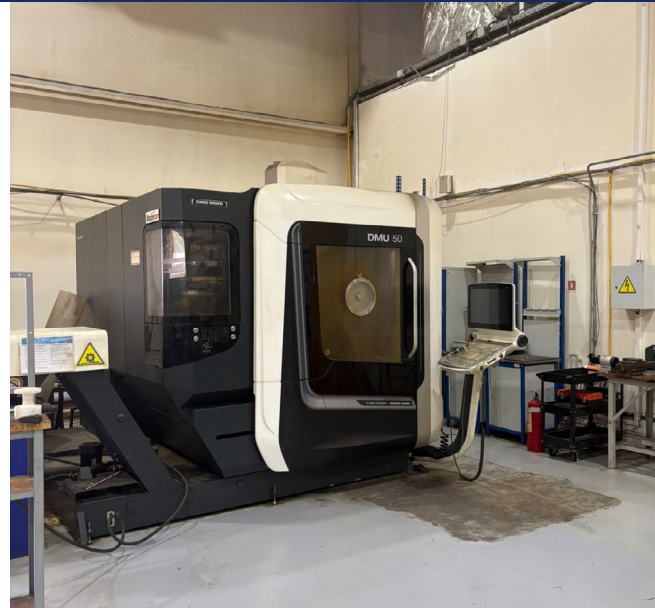
Current Projects



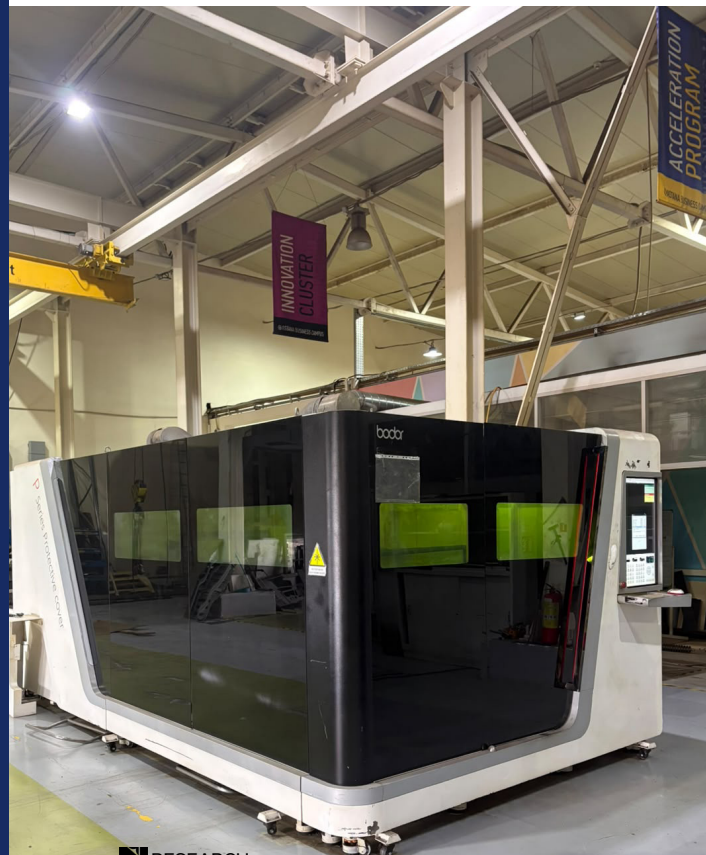
Demonstration Of The Machine Shop's Engineering Work Diversity

The team is designing and manufacturing a sealed stainless-steel pressure vessel for research at the School of Engineering. The project includes detailed engineering, machining, fabrication of a threaded clamping mechanism, assembly, and final inspection.

Another project focuses on a mechanism that reproduces a sequence of hoofbeats. The team is developing the 3D model and mechanical design, including a geared-motor drive, eccentric mechanisms, and linkages.



The Machine Shop is also producing complex-profile components for an experimental gearbox, including an eccentric shaft and cycloidal gear, using advanced CNC machining technologies.



Training and Support for Innovation

In addition to supporting research, the Machine Shop provides engineering expertise and manufacturing infrastructure to NU technology teams, Technopark residents, and external organisations. Support may include design development, manufacturability assessment, prototyping, component fabrication, refinement, and assembly.

Practical training is another important area of the Machine Shop's work. Students, staff, and professionals can develop skills in 3D design, CAD/CAM programming, CNC machining, welding, sheet-metal fabrication, and additive manufacturing.

Hands-On Engineering

The programme follows a learning-through-making approach. In Hands-on Metal Work sessions, participants complete the main stages of metal fabrication - from laser cutting and bending to finishing and assembly - and produce an item themselves.

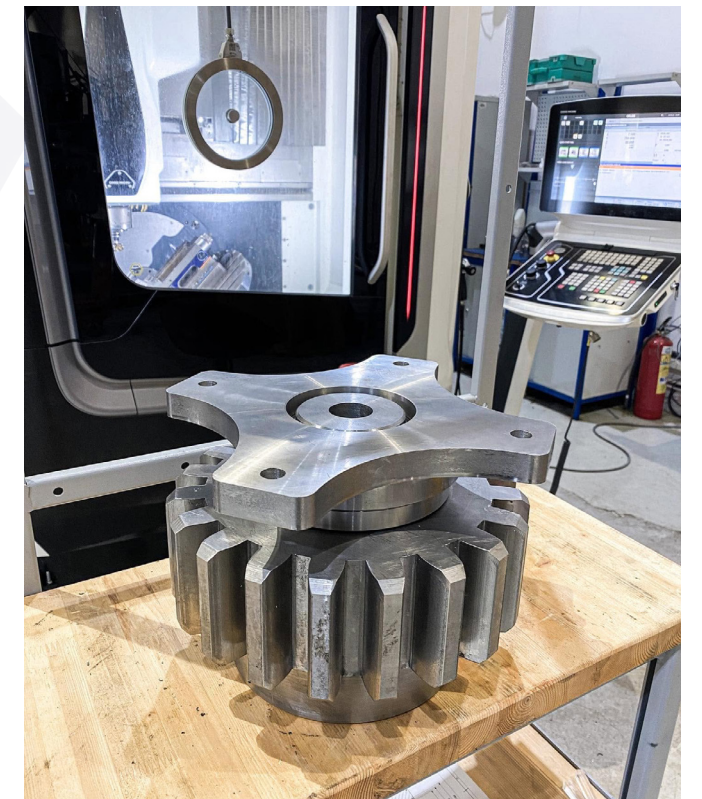


Impact and Future Development

Researchers can develop experimental equipment and specialised components, students gain practical engineering experience, and technology teams receive the support needed to advance their innovations. In this way, the Machine Shop connects research, engineering design, manufacturing, and hands-on learning within NU's research and innovation ecosystem.

Future development will focus on expanding capabilities in prototyping, automation, additive manufacturing, and reverse engineering, while broadening practice-based educational programmes.

By Providing Access To Engineering Expertise And Modern Manufacturing Technologies, The NURA Machine Shop Shortens The Path From A Research Idea To A Testable Physical Prototype.



SPOTLIGHT ON SUCCESS

Achievements, recognitions and research milestones from across the NU research community

Professor Naureen Durrani wins 2026 AUA Scholars Award to advance research collaboration with Seoul National University



 Professor Naureen Durrani



GRADUATE
SCHOOL
OF EDUCATION



Project Lead

Professor Naureen Durrani

School / Centre or Laboratory

Graduate School of Education

Key team members and partners

Dr Kevin Kester, Seoul National University

Date/period

July 2026 -February 2027

Official links:

[AUA Scholars Award Program](#)

The collaboration brings together Professor Durrani's research on gender, curriculum, social cohesion and education in contexts of conflict with Dr Kester's work on education, peacebuilding and global citizenship. A central strand of their work will develop a comparative research agenda examining how school curricula and textbooks engage with gender, peacebuilding, citizenship and inclusion across Pakistan and Kazakhstan.

Professor Durrani will undertake a research visit to Seoul National University in November-December 2026, working with Dr Kester and the Education, Conflict and Peace Lab. The collaboration will include joint research and analysis, engagement with post-graduate students and faculty, development of publications and future grant proposals, and dialogue with UNESCO on possibilities for extending research on textbooks and peacebuilding in Kazakhstan and Central Asia.

Professor Naureen Durrani, Graduate School of Education, has won the Asian Universities Alliance (AUA) Scholars Award 2026, supporting a research collaboration with Dr Kevin Kester, Seoul National University. The award will enable Professor Durrani to spend ten working days at Seoul National University, where the two researchers will develop a comparative programme of research on education, gender, peacebuilding and social transformation.

The award is intended to provide a foundation for a longer-term partnership between researchers at Nazarbayev University and Seoul National University, including reciprocal academic visits and future collaborative research activities.

Design, Modeling, Sensor Fusion and Adaptive Control of a Low-Cost Reusable Rocket



SCHOOL OF
ENGINEERING



Project Lead

Altay Zhakatayev

Position, School / Centre or Laboratory

Assistant Professor, Mechanical and Aerospace
Engineering Department

Key team members and partners

Tangirbergen Manarbekuly

Date/period

May 2026



iD Tangirbergen Manarbekuly,
MSc student

What Was Achieved?

Nazarbayev University's MSc student Tangirbergen Manarbekuly designed, built, and successfully launched low-cost guided rocket. The primary objective was to develop and experimentally validate technologies for the modeling, navigation, and control of rocket systems using modern design methods and accessible electronic components. The project was performed together with the National Center for Space Research and Technology. The achievement is important since it opens the door for further research and progress on the design of low-cost guided rockets. This project also builds local expertise in rocket design and control.

“

The future is moving towards swarm of cheap and accessible drones and rockets. We also are doing research in this direction.



iD Altay Zhakatayev, Assistant
Professor

Impact of the Project

Kazakhstan's aerospace engineering community can use the results for further research.

This is important milestone for local aerospace engineering related projects.



Key Results

The design of a low-cost rocket with out-of-the-shelf components was achieved.

A six-degree-of-freedom (6-DoF) mathematical model of flight dynamics, computational fluid dynamics (CFD) analyses, necessary electronic circuits, dynamics simulations, and algorithms for control and navigation data processing were developed.

The rocket was successfully launched.

Genetic Determinants of Coronary Artery Disease in Type 2 Diabetes Mellitus

Among Asian Populations: A Meta-Analysis



iD Aida Kabibulatova, Global Health Program PhD

Student's Full Name

Aida Kabibulatova

PhD Program, Year of Study

Global Health Program, year 4

School / Department

School of Medicine, Department of Biological and Biomedical Sciences

NU Supervisor

Kuralay Atageldiyeva, MD, PhD, Assistant Professor, Department of Medicine Nazarbayev University School of Medicine

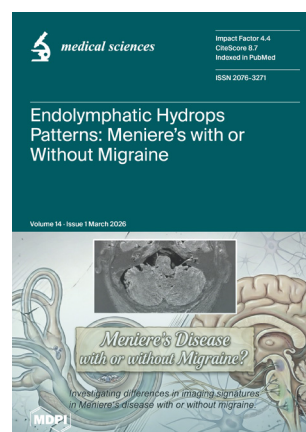
Coauthors

Kamilla Mussina, Joseph Almazan, Antonio Sarria-Santamera, Alessandro Salustri, Kuralay Atageldiyeva

Why Is This Research Important?

Type 2 diabetes substantially increases the risk of coronary artery disease, yet genetics may partly explain why some people develop cardiovascular complications while others do not. Most genetic evidence has come from European populations, while Asian populations remain comparatively understudied, with limited focus on population-specific variants. Understanding

population-specific genetic susceptibility is therefore important for more representative cardiovascular research and for the future development of precision prevention strategies. This meta-analysis synthesizes evidence on genetic variants associated with coronary artery disease risk in Asian patients with Type 2 Diabetes Mellitus.



Med. Sci. 2026, 14(1), 52

[DOI / Publication Link](#)

Research in Brief

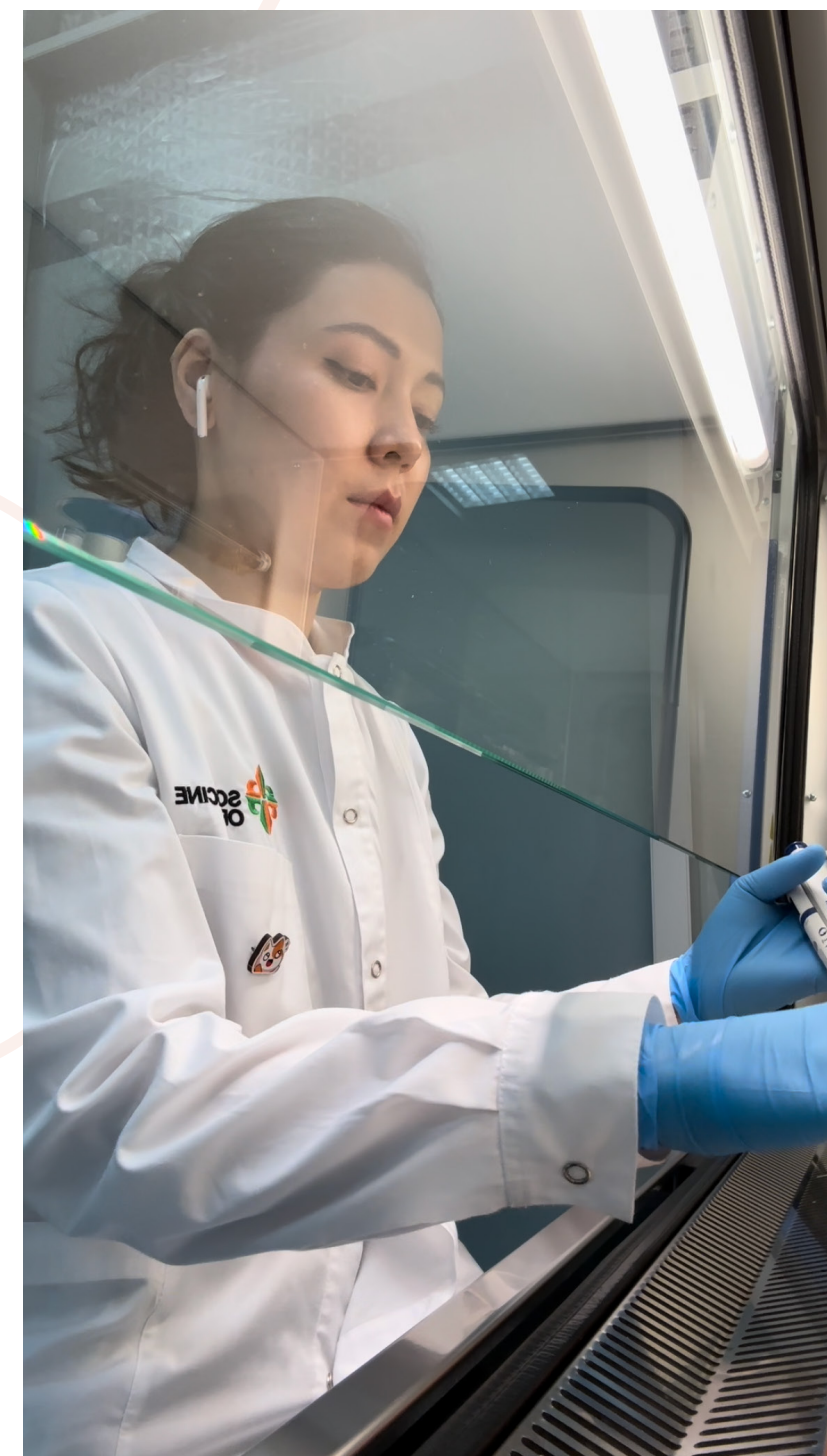
This study aimed to understand and find out whether inherited genetic differences may affect the risk of coronary artery disease in Asian people with type 2 diabetes. We reviewed evidence from studies involving several Asian populations and compared genetic variants found in people with and without coronary artery disease. The results suggest that there is no single "risk gene." Instead, cardiovascular risk appears to be influenced by multiple genetic variants that affect different biological processes in the body.

“

It started as a question about one gene. It ended as a case for rethinking how we study genetic risk in diabetes altogether.

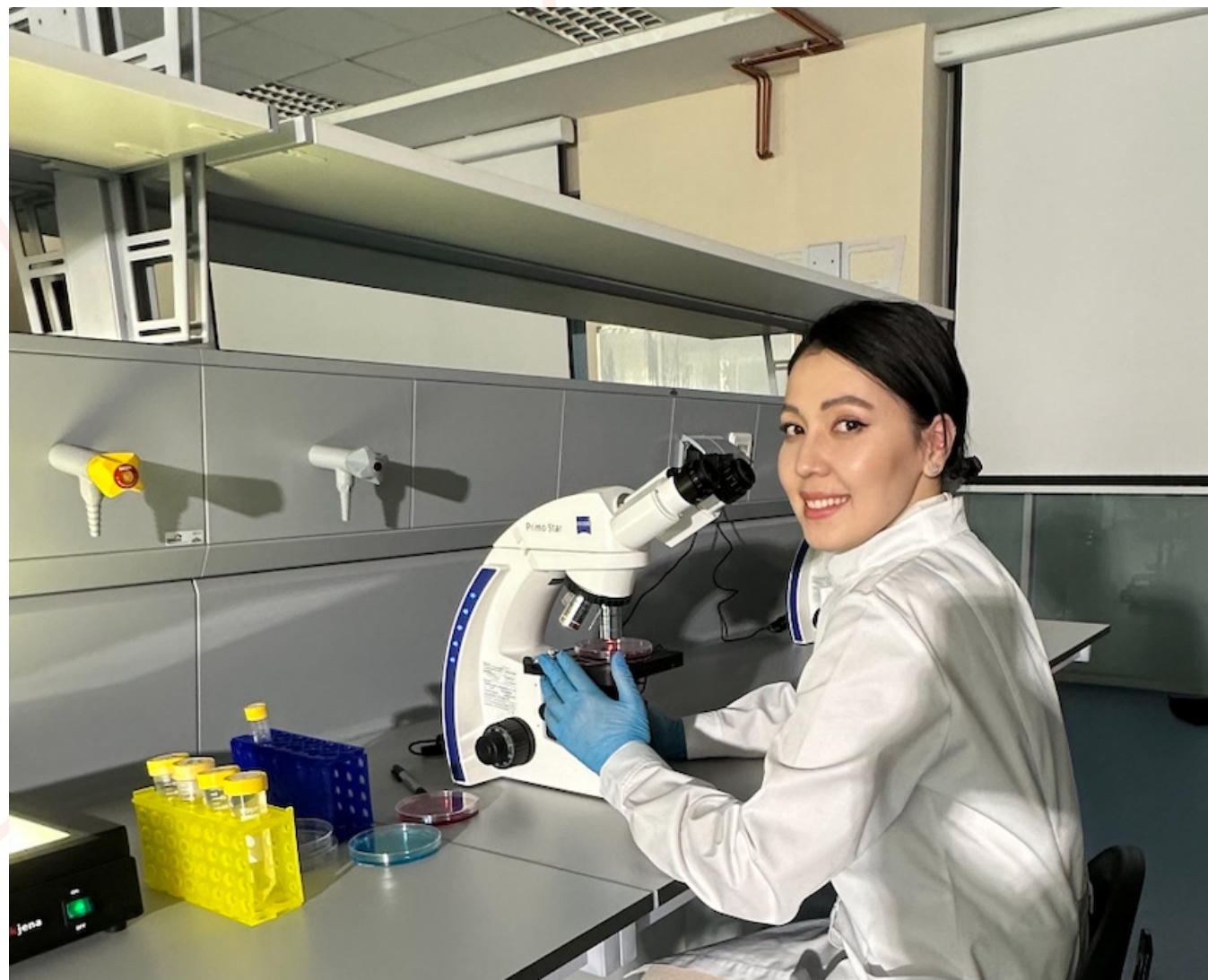
How Did You Approach The Research?

I and my colleagues conducted a systematic review and meta-analysis following PRISMA guidelines. Studies were identified through PubMed, Ovid MEDLINE, Scopus, and Web of Science and assessed using predefined eligibility criteria. We compared genetic variants reported in Asian adults with type 2 diabetes with and without coronary artery disease, then pooled available effect estimates using random-effects meta-analysis while assessing study quality, heterogeneity, and publication bias.



Your Contribution

I developed the study methodology and performed the formal analysis. I was also directly involved in study screening and investigation, data extraction and curation, interpretation of the genetic and clinical evidence, and preparation of the original manuscript. This work allowed me to combine my clinical background in cardiology with my PhD research interests in diabetes, cardiovascular disease, and genetics.



What Did You Find?

Across 11,268 participants, we found no significant overall genetic effect when all studied variants were considered together. Instead, individual loci showed different associations with coronary artery disease, involving pathways related to lipid metabolism, incretin and metabolic signaling, inflammation, oxidative stress, and vascular function. The high variability between studies suggests that genetic susceptibility is complex and may differ across populations, supporting the need for larger and more population-specific genetic studies.

Who Could Benefit From This Research?

The findings are relevant to cardiovascular and diabetes researchers, geneticists, clinicians, and public health scientists. They can help guide future genetic studies toward more diverse populations and support the longer-term goal of developing more precise approaches to cardiovascular risk assessment and prevention in people with type 2 diabetes.

Student Perspective

This study became an important foundation for my PhD research and it showed me what we already know about genetic risk, but more importantly, how much remains unknown in understudied populations.

Key Result

Among 11,268 participants, no single overall genetic effect emerged; instead, specific genetic loci showed different associations with coronary disease, highlighting the complexity and possible population-specific nature of genetic risk.

NU Research Team Received Utility Model Patent For A Physics-Informed Neural Network Method



iD Omarkhan Samarkanov,
Research Assistant and PhD
candidate

Student's Full Name and PhD Program

Omarkhan Samarkanov,
Research Assistant and PhD candidate

NU Supervisor

Dr. Masoud Riazi: Head of the Department of Mining and Geosciences, and Associate Professor in the Petroleum Engineering Program

Research team partners

Irawan Sonny, PhD, Associate Professor, Department of Petroleum Engineering, School of Engineering
Dr. Serveh Kamrava, Assistant Professor, Colorado School of Mines

Date or period of the achievement

Patent application filed: 5 June 2026

What Was Achieved?

The team received Kazakhstan utility model patent No. 12814 to model emulsion displacement in a heterogeneous porous medium. The method jointly predicts pressure, phase saturation, mobile emulsion concentration, retained emulsion, and effective permeability as coupled space-time fields.

Who Can Use The Results?

Reservoir engineers, enhanced oil recovery specialists, research laboratories, and energy companies can use the method for faster screening and analysis of emulsion flooding scenarios, mobility-control behavior, and sweep-improvement potential in heterogeneous reservoirs.

Key Result

- Kazakhstan utility model patent No. 12814 was published on 21 August 2026.
- The patented method was validated in a two-dimensional heterogeneous reservoir setting against an in-house finite-volume reference model.
- Validation showed close agreement for key emulsion-flooding fields, including water saturation, mobile emulsion, and trapped emulsion, supporting the method's use for scenario analysis in enhanced oil recovery.

“
This Patent Shows How Physics-Informed Machine Learning Can Support Practical Reservoir Engineering By Evaluating Emulsion Flooding Scenarios Faster While Keeping The Governing Physics At The Core

Emulsion flooding is an enhanced oil recovery method, but its behavior in heterogeneous reservoirs is difficult to model because multiphase flow, droplet transport, droplet retention, and permeability reduction interact strongly. The patented method offers a physics-based machine-learning approach for faster scenario screening while keeping the governing reservoir-flow physics inside the model.



Why Does It Matter For Kazakhstan Or Internationally?

For Kazakhstan, the patent supports locally developed digital reservoir-engineering capability in a strategically important energy sector. Internationally, it contributes to the growing use of physics-informed machine learning as a bridge between mechanistic reservoir simulation and practical engineering decision support.

BEHIND THE RESEARCH

In-depth stories behind discoveries, fieldwork and scientific progress at Nazarbayev University

Advancing Next-Generation Photovoltaic Technologies at Nazarbayev University



iD Annie Ng, PhD, Associate Professor

Principal Investigator

Annie Ng, Associate Professor

School / Research Centre

Department of Electrical and Computer Engineering, School of Engineering

Funding program / grant

Innovating Integrated Photovoltaics Based on Emerging Perovskite and Organic Materials for Architectural Electricity-Generating Glass. Project: CRP

Research Question

How can perovskite and organic photovoltaics be engineered to deliver efficient, stable, and scalable energy solutions under real-world operating conditions?



Why Do We Need Next-Generation Solar Technologies?

Crystalline silicon photovoltaics remain the dominant solar technology. However, conventional silicon modules are generally rigid, opaque, and bulky, and their production relies on high-temperature, energy-intensive processes. In contrast, third-generation photovoltaics can be manufactured using lower-temperature, solution-based thin-film deposition techniques. This enables lightweight and flexible solar modules, semi-transparent solar glass, and other innovative designs that can be integrated into buildings, portable electronics, and everyday products.



Pic. 1. Professor Annie Ng introduces Nazarbayev University's research directions and opportunities for collaboration in perovskite photovoltaics and energy storage at the Ordos New Energy Research Institute.

What is the team working towards?

A Research Group at Nazarbayev University, led by Associate Professor Annie Ng, advances third-generation solar technologies based on advanced functional materials. The group aims to engineer high-performance photovoltaic devices and translate them into innovative applications for daily life. The group's research follows the scientific pathway from material growth and thin-film processing to photovoltaic-device fabrication, energy-harvesting circuits, and integrated energy systems. The group focuses particularly on emerging perovskite and organic photovoltaic materials, which offer opportunities beyond conventional solar technologies.



Pic. 2. Professor Annie Ng visit the Ordos New Energy Research Institute, Inner Mongolia to learn about its research facilities and technology platforms.

How is the Team Improving Performance and Reliability?

The interdisciplinary team brings together researchers and students from different engineering and scientific fields, enabling work across materials, devices, circuits, and integrated energy systems. The group investigates strategies to improve photovoltaic power conversion efficiency, stability, and scalability. Key directions include perovskite crystal engineering, interface modification, defect passivation, optimization of charge-transport layers, and tandem-device architectures.



Pic. 3. The Ordos New Energy Research Institute in Inner Mongolia, China. The institute provides a platform for renewable-energy research, technology development and industry engagement.



Pic. 4. The Nazarbayev University delegation, led by **Associate Professor Annie Ng**, attends a technical seminar with Beihang University students and researchers during the China-Kazakhstan Partner Research Institute Exchange Programme.

Pic. 5. A section of the Kubuqi Desert "Solar Great Wall" in Ordos, Inner Mongolia, China. The large-scale project integrates solar-power generation with desertification control and ecological restoration.



What Could These Technologies Power?

The research also investigates stable photovoltaic materials for demanding operating environments, including high humidity, elevated temperatures, and radiation exposure. These efforts are essential for translating promising laboratory devices into reliable technologies for real-world use. The researchers also integrate photovoltaics with energy-management systems. Current research investigates indoor energy harvesting for Internet-of-Things applications, building-integrated photovoltaics, and solar-powered systems for a range of practical applications. These projects demonstrate the potential of emerging photovoltaic technologies to support more sustainable daily life. One example is the Solar Energy-Powered Artificial Tree for Sustainable Urban Applications. Associate Professor Annie Ng is working with postdoctoral

fellows Dr Damir Aidarkhanov, Aidar Seralin, and Yerassyl Olzhabay; PhD student Ali Serikov; and master's student Beksultan Mukhamedaliuly to realize this concept. The team has patented the technology and is currently developing a prototype for practical demonstration.

Pic. 6. Nazarbayev University delegates and Beihang University colleagues during the China-Kazakhstan Partner Research Institute Exchange Programme on Perovskite Solar Cells and All-Solid-State Batteries at the School of Materials Science and Engineering, Beihang University, Beijing (July 2026).



How Does International Collaboration Support Progress?

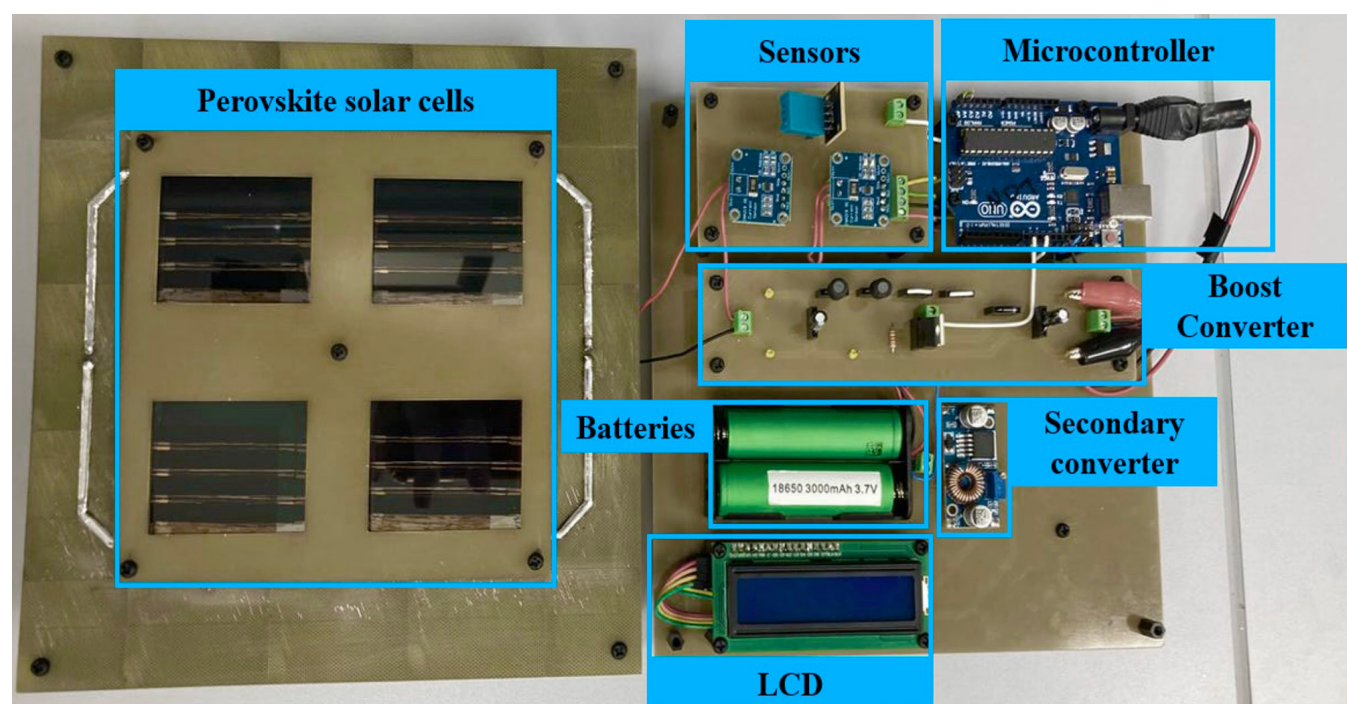
International collaboration is accelerating this progress. In July 2026, the Nazarbayev University delegation, led by Associate Professor Annie Ng, visited Beihang University in Beijing and the Ordos New Energy Research Institute in Inner Mongolia. The visit was organized within the framework of the China-Kazakhstan Partner Research Institute Exchange Programme. It strengthened joint research, technical exchange, student development, and future technology transfer. During the same trip, Prof. Annie Ng visited the Kubuqi Desert "Photovoltaic Great Wall" in Ordos, gaining valuable insight into large-scale renewable-energy deployment.



Pic. 7. Postdoctoral fellow **Dr Gulzhan Bizhanova** operates a thin-film deposition system for the fabrication of photovoltaic devices.

The project integrates solar-power generation with desertification control and ecological restoration. This model demonstrates how photovoltaic technologies can deliver both clean electricity and environmental benefits, offering a valuable reference for future pho-

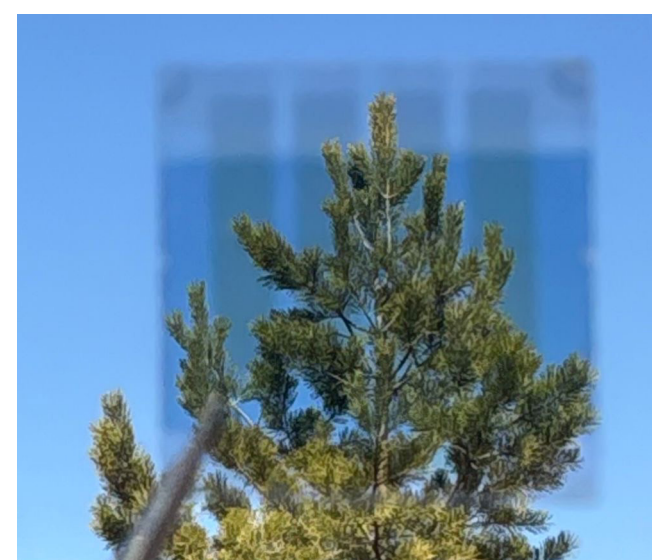
tovoltaic deployment in Kazakhstan. The group is also developing collaborations with Chinese universities and start-up companies to explore practical applications and accelerate the commercialization of emerging solar technologies.



Pic. 8. Prototype perovskite photovoltaic energy-harvesting platform, integrating perovskite solar cells fabricated at NU laboratories, sensors, a microcontrollers, power converters, rechargeable batteries, and an LCD display.



Pic. 9. NU delegation at the Beihang University Aviation Museum, Beijing, during the China-Kazakhstan Partner Research Institute Exchange Programme.



Pic. 10. Organic photovoltaic (OPV) cells fabricated with semitransparent electrodes for an ongoing project, demonstrating the potential of power-generating glass for building-integrated photovoltaic applications.

Can Next-Generation Solar Technologies Meet Astana's Climate Challenge?

The group is planning on-site demonstrations in Astana to evaluate emerging photovoltaic technologies under real operating conditions. Astana's very low winter temperatures, strong winds, and large seasonal temperature variations provide a valuable test environment. The group will evaluate and develop solutions based on advanced materials, device structures, and energy-management systems to improve long-term stability and energy yield, supporting the future deployment of reliable solar technologies in Kazakhstan.

Building Inclusive Teaching Capacity:

The Role of Initial Teacher Education in Kazakhstan



iD Dr Janet Helmer, Associate Professor

Principal Investigator

Dr Janet Helmer, Associate Professor

School / Research Centre

Nazarbayev University Graduate School of Education (GSE)

Laboratory / Research Group

Inclusive Education, Graduate School of Education (project team)

Funding program / grant

CARCEIT EITP Grant; grant number: GSE2025007

Research Question

How does initial teacher education in Kazakhstan shape pre-service teachers' readiness for inclusive teaching, and what programme experiences strengthen that readiness?



Kazakhstan is rapidly expanding inclusive education, but initial teacher education is still adapting from a post-Soviet tradition in which many learners with special educational needs were educated through separate specialist provision. This creates a practical gap: future teachers may support inclusion in principle yet feel uncertain about teaching diverse learners in mainstream classrooms. The project examines how universities prepare pre-service teachers for this transition, which aspects of preparation build confidence and inclusive orientations, and where segregated assumptions continue to shape expectations. Without stronger evidence on pre-service preparation, policy commitments to inclu-

sion may outpace the professional capacity of new teachers entering Kazakhstan's schools.

How the Research Unfolded?

The project uses a mixed-methods design across every teacher-education universities in Kazakhstan. The completed quantitative phase surveyed 2,074 pre-service teachers from eight universities using the SACIE-R and TEIP instruments. Latent profile analysis identified distinct configurations of attitudes, concerns, sentiments, and inclusive-teaching self-efficacy. The next qualitative phase will involve approximately 35-40 pre-service teachers and 8-10 teacher educators in semi-structured interviews, alongside analysis of

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"Inclusive education depends not only on whether future teachers support the idea, but on how they understand responsibility for diverse learners and whether their preparation gives them the confidence to act."

ITE curricula and course syllabi. Interview data will be analysed thematically, informed by the Inclusive Pedagogical Approach in Action framework. The project is led by Janet Helmer with GSE colleagues Kairat Kurakbayev, Aruzhan Zhambyl, and Xeniya Tursunbayeva. Integrating survey



profiles, interview accounts, and programme documents will show both how ready future teachers appear and how they understand inclusion.

Main Challenge or Behind the Scenes Moment

One unexpected result was the smallest profile: these pre-service teachers reported relative comfort around learners with special educational needs and little concern, yet strongly rejected mainstream inclusion and reported very low teaching efficacy. This contradiction made the qualitative phase especially important for understanding how future teachers interpret inclusion, responsibility, and specialised provision.



What Has the Research Achieved?

The quantitative phase identified three readiness profiles. Just over half of participants (53.7%) were confident in inclusive teaching but showed only average orientations toward inclusion; 42.3% were modestly prepared across all dimensions; and 3.9% combined strongly exclusionary attitudes with very low self-efficacy. Inclusive-education coursework reduced the odds of belonging to this most concerning profile, while simply having completed a school practicum did not distinguish the more confident group. The findings suggest that exposure alone is insufficient: the quality of preparation, direct experience with learners with special educational needs, and opportunities to build teaching confidence matter. The qualitative phase will examine how participants themselves explain these patterns.

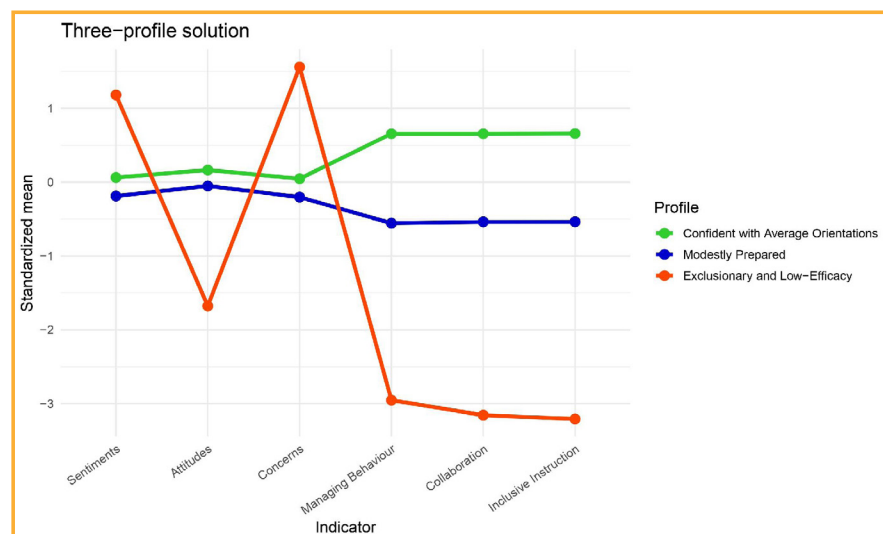


Fig. 1. Three-profile solution

Who Will Benefit, and What Value Does It Create?

The main beneficiaries are teacher-education programmes, university faculty, policymakers, and schools preparing to implement inclusive education more consistently. Universities can use the findings to review how inclusion is taught, how practicum is structured, and where students need differentiated support. Policymakers can use the evidence to connect national inclusion re-

forms with pre-service teacher preparation. Schools may ultimately benefit from graduates who enter the profession with stronger confidence, more realistic expectations, and a clearer sense of responsibility for diverse learners in mainstream classrooms. Researchers in Kazakhstan and Central Asia will also gain evidence from an underrepresented post-Soviet context.

The Next Concrete Step

The next step is to conduct and analyse interviews with pre-service teachers and teacher educators, review programme documents, and integrate these qualitative findings with the readiness profiles to identify specific curriculum and practicum improvements.

Turning Local Resources and Waste into Materials for Cleaner Water



SCHOOL OF
ENGINEERING



Stavros Pouloupoulos,
Professor

The Single Main Question Guiding The Project

Clean water depends on technologies that can remove toxic metals, persistent organic contaminants, and harmful microorganisms without creating excessive cost or environmental burden. Professor Pouloupoulos's research addresses this challenge by converting locally available minerals and biomass residues into functional adsorbents and catalyst supports. This work is especially relevant to Kazakhstan, where water scarcity, mining and industrial activities, and the need for resource-efficient treatment place pressure on water quality. Conventional powdered materials can be difficult to recover, while high-performing materials may require costly or

Principal Investigator

Stavros Pouloupoulos, Chair and Full Professor of Chemical and Materials Engineering Department

School / Research Centre

Nazarbayev University School of Engineering

Laboratory / Research Group

Chemical Reaction Engineering Lab / Environmental Science and Technology Group

Funding program / grant

Nazarbayev University Faculty Development Competitive Research Grant Program (General), 2024-2026; Project 201223FD8809, Valorization of local kaolin as adsorbent and catalyst for water/wastewater treatment

How can waste-derived and locally sourced mineral-based materials be engineered into effective, practical, and environmentally sustainable technologies for removing hazardous chemicals from water?

environmentally intensive production. The research therefore links pollutant removal with material recovery and reuse, waste valorization, and life-cycle assessment to develop water-treatment solutions that are effective, practical, and environmentally responsible.

How did the team investigate the problem, and what makes the approach distinctive?

Led by Professor Pouloupoulos, the research was carried out at Nazarbayev University. The work focused on converting locally available minerals and biomass wastes into functional materials for water treatment and catalysis. The team used kaolin, olive stones, and spent coffee grounds as ma-

terial platforms, then tailored their chemistry through acid-base activation, silane functionalization, TiO₂ or MoS₂ incorporation, pelletization, and green deposition of Ag, Pd, and Cu nanoparticles. The investigation combined adsorption experiments, catalytic testing, antibacterial and biofilm assays, and life-cycle assessment. Materials were characterized using structural, surface, thermal, and microscopic techniques. Collaboration between materials, environmental, and biological science researchers enabled an integrated approach covering material development, performance evaluation, and microbiological testing.



Results and Achievements of the Project so Far?

The project has produced five peer-reviewed publications, with an additional catalyst study under review. Three achievements stand out. First, optimized 2-mm thiol-functionalized kaolin pellets achieved 74.2% Hg(II) removal and enabled complete material recovery, addressing a major limitation of powdered adsorbents. Second, ZnCl₂-activated olive-stone carbon achieved the highest mercury capacity (162.0 mg g⁻¹) despite having the lowest surface area (321 m²g⁻¹), demonstrating that surface chemistry can matter more than surface area. Life-cycle assessment further showed that the material with the lowest production impact is not necessarily the most sustainable when treatment performance is also

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Effective water treatment is not only about achieving high removal in the laboratory; it is about designing materials that are affordable, recoverable, reusable, and environmentally responsible.

considered. Third, Pd-Cu/hydrochar reduced 4-nitrophenol in approximately three minutes, while Ag-Cu/kaolin achieved complete reduction within eight minutes and retained 92% activity after five cycles.

The main challenge and an unexpected Discovery

The main challenge was producing pellets strong enough for recovery without restricting mercury uptake. Early formulations showed that increasing binder concentration improved mechanical stability but reduced adsorption, requiring optimization of binder content and pellet diameter. Unexpectedly, thiol grafting enhanced mercury uptake but promoted biofilm formation, whereas untreated and acid-base-treated pellets inhibited biofilms. This shifted the research from maximizing adsorption alone toward balancing performance, recoverability, durability, and microbial behavior.

Value of the Research

Water-treatment researchers, utilities, and industries can benefit from materials designed not only for effective pollutant removal but also for recovery, reuse, and reduced environmental impact. Communities affected by mercury and organic contaminants could ultimately benefit from more practical and lower-cost treatment options based on locally available minerals and agricultural or food waste. For Kazakhstan, the research creates additional value by promoting the use of local kaolin resources and waste valorization, supporting circular-economy approaches while reducing dependence on costly treatment materials. The results also provide a foundation for future collaboration with water-treatment and industrial partners.



Publication outputs from the study

1. Abdulsalam, A. A., Maroulas, K. N., Zhandauletova, R., Abdikarimova, A., Piroozi, G., Kammakakam, I., Suorineni, F. T., Kyzas, G. Z., & Pouloupoulos, S. G. (2026). Sustainable conversion of olive stone waste into activated carbon: Comparative activation strategies for mercury removal and life cycle assessment. *Environmental Technology & Innovation*. <https://doi.org/10.1016/j.eti.2026.105207>
2. Idowu, A. C., Abdulsalam, A. A., Pirman, M., Amrasheva, D., Arkhangelsky, E., Pham, T. T., & Pouloupoulos, S. G. (2026). Comparative performance of hierarchical 3D flower-like and 2D MoS₂-kaolin hybrid adsorbents for mercury remediation and antimicrobial applications. *Chemical Engineering Journal Advances*, 27, 101341. <https://doi.org/10.1016/j.cej.2026.101341>
3. Abdulsalam, A. A., Idowu, A. C., Khabdullina, S., Sairan, Z., Sarbassov, Y., Pirman, M., Amrasheva, D., Arkhangelsky, E., Pham, T. T., & Pouloupoulos, S. G. (2026). Waste valorization and water remediation via green Pd, Cu, and Pd-Cu/hydrochar nanocatalyst: 4-nitrophenol reduction, antibacterial activity, and biofilm formation. *ChemEngineering*, 10(4), 50. <https://doi.org/10.3390/chemengineering10040050>
4. Abdulsalam, A. A., Khabdullina, S., Sairan, Z., Sarbassov, Y., Pirman, M., Amrasheva, D., Kyzas, G. Z., Pham, T. T., Arkhangelsky, E., & Pouloupoulos, S. G. (2025). Mercury removal and antibacterial performance of a TiO₂-APTES kaolin composite. *Sustainable Chemistry*, 6(4), 48. <https://doi.org/10.3390/suschem6040048>
5. Abdulsalam, A. A., Pirman, M., Begonova, D., Kyzas, G. Z., Xia, D., Pham, T. T., Golman, B., & Pouloupoulos, S. G. (2025). Thiol functionalized kaolin pellets: Development and optimization for mercury ion removal from aqueous solutions. *Applied Clay Science*, 277, 107983. <https://doi.org/10.1016/j.clay.2025.107983>

The Next Concrete Step

The next step is validation of these materials with real contaminated water samples, generating the durability and regeneration data needed for pilot-scale testing with water-treatment and industrial partners.

Hybrid Futures:

A Study of Western-Style Universities, Local Epistemologies, and the Making of Higher Education Hubs in Kazakhstan and Uzbekistan



iD Munyaradzi Hwami,
Associate Professor

Principal Investigator

Munyaradzi Hwami, Associate Professor

School / Research Centre

Graduate School of Education

Laboratory / Research Group

Central Asian Research Centre for Educational Innovation and Transformation (CARCEIT)

Funding program / grant

CARCEIT International Collaborative Education Project (ICEP)

Research Question

How do Western-style universities in Kazakhstan and Uzbekistan negotiate, translate, and perform global models of university governance amidst the constraints and opportunities of local political-cultural logics and Soviet institutional legacies?



education reforms that are globally competitive, locally relevant, and sustainable.

How the Research Unfolded?

The team is investigating the problem through a comparative mixed-methods case study of six universities: Nazarbayev University and two international branch campuses in Kazakhstan, and New Uzbekistan University and two branch campuses in Uzbekistan. The research integrates three strands. First, document analysis and interviews with faculty and administrators is examining how global governance models interact with Soviet institutional legacies. Second, curriculum analysis, student focus groups, body mapping, and image-card activities will explore how learners experience epistemic inclusion and exclusion,

This study seeks to provide a systematic, comparative, and theoretically grounded assessment of Western-style universities in Central Asia. Although Kazakhstan and Uzbekistan have implemented substantial reforms, existing evidence remains fragmented and is primarily focused on institutional rhetoric (NU, 2025). Three critical gaps warrant further investigation: the comparative influence of flagship universities and international branch campuses; the determinants of international faculty and student mobility and retention; and the negotiation between global standards and local epistemologies. The research will evaluate whether these institutions foster sustainable academic communities, reinforce indigenous institutions, and produce measurable outcomes in innovation,

Our ambition is to ensure that Central Asian universities do not merely import global models but transform them into locally grounded institutions that preserve knowledge traditions, amplify marginalized voices, and advance sustainable regional development.

employability, knowledge spillovers, and regional development. Additionally, the study will assess the extent to which hybrid models maintain linguistic, cultural, and epistemic diversity. The results are expected to inform higher ed-

guided by Fricker's (2007) concept of epistemic injustice. Third, surveys of faculty and students, policy analysis, and policymaker interviews will assess mobility, retention, and higher education hub development. The approach is distinctive because it combines quantitative, qualitative, spatial, and arts-based evidence across institutional, national, and lived scales, revealing how global models are negotiated, contested, and adapted within local political, cultural, and epistemic contexts.



Pic. 1. Dr. Munyaradzi Hwami (PI), Dr. Kairat Kurakbayev (Co-PI) and Professor Iveta Silova (International Co-PI, Arizona State University) on the sidelines of CIES 2026.

What Has The Research Achieved?

The project's comparative document analysis has challenged the assumption that internationalization produces institutional homogenization. Its principal conceptual achievement is the development of "layered hybridization," which explains how Central Asian universities negotiate global models, Soviet legacies, and national political priorities simultaneously. Rather than framing transformation as a linear shift from post-Soviet to global



Pic. 2. Principal Investigator, Dr Hwami, presenting at CIES 2026 CONFERENCE, San Francisco

institutions, the findings reveal an uneven, contested, and temporally layered process in which different institutional logics coexist and interact. The project therefore positions hybridity as the primary mechanism through which international models are localized, contested, and institutionalized. The team has also disseminated these emerging findings at two major international conferences: the Comparative and International Education Society (CIES) and the British Association for International and Comparative Education (BAICE).

Main Challenge

Our primary challenge has been securing access to research sites and participants, as several universities have declined interview requests. This institutional gatekeeping limits first-hand evidence and complicates cross-case comparisons. In response, we are strengthening document analysis, exploring alternative recruitment channels, and refining case selection while maintaining ethical standards. Importantly, restricted access is itself a finding, revealing the power relations, institutional cultures, and political sensitivities shaping university reform in Central Asia.

Benefits of the Research

PStudents, faculty, administrators, policymakers, researchers, and international partners will benefit from the research. Participants gain opportunities to reflect on their experiences, amplify marginalized perspectives, and develop academic networks. Universities and governments receive evidence to improve curricula, governance, language policy, academic freedom, student support, and international partnerships. By integrating local epistemologies with global standards, the project supports cultural sovereignty and more context-sensitive higher education models. Its findings can strengthen Kazakhstan and Uzbekistan as sustainable education hubs while informing decolonial and comparative scholarship globally. Over time, improved policies may enhance workforce quality, social mobility, civic engagement, regional autonomy, and economic development.

The Next Step

The next priority is to establish formal partnerships with participating universities and secure ethical access for interviews with students, faculty, and administrators. This will enable robust cross-institutional validation, amplify underrepresented perspectives, and provide policymakers and university leaders with credible evidence for more inclusive, locally grounded reforms.

RESEARCH SNAPSHOT

Brief insights into recent studies, publications and discoveries from the NU research community

Organic Solar Cells for Space: Why Device Design Matters

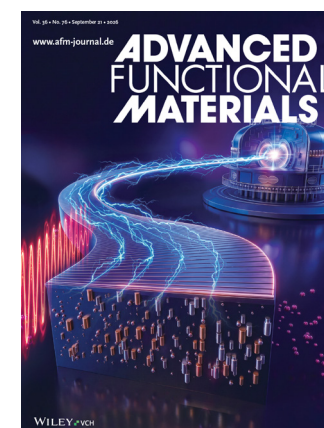
Gulnur Akhtanova, Hryhorii P. Parkhomenko, Marat Kaikanov,
Andrii I. Mostovyi, Mykhailo M. Solovan, Viktor V. Brus



iD Gulnur Akhtanova

Research Question

How does the choice of charge-transport layers in conventional and inverted organic solar cells influence their resistance to proton radiation and their recovery after thermal treatment?

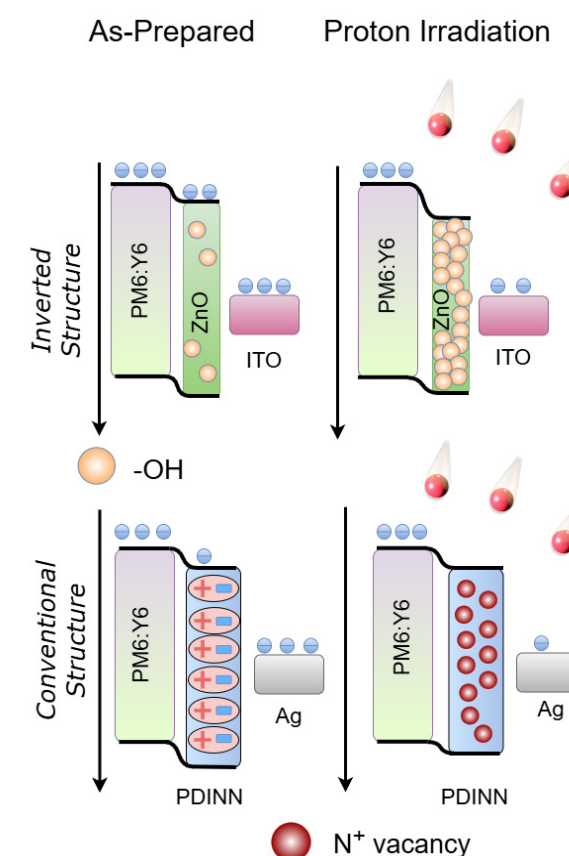


Advanced Functional Materials
(Impact Factor 19.9)

DOI / Publication Link

Research Highlights:

- Inverted organic solar cells showed greater resistance to extreme space irradiation compared to conventional OSC.
- They retained twice the efficiency of conventional devices: **3.5%** vs. **1.75%**.
- Thermal annealing restored inverted-cell efficiency to **6.72%**, highlighting their potential for space applications.



Radiation Resistance of Organic Solar Cells for Space Applications: Conventional vs. Inverted Device Architecture

Conventional solar cells are primarily based on silicon (Si) semiconductors and have been commercially produced for decades. They provide a renewable alternative to fossil fuels on Earth and have also been widely used to power satellites in space. Although widely used, silicon solar cells have limitations in weight, flexibility, and manufacturing cost. Emerging alternatives, such as perovskite and organic solar cells, offer the potential for lightweight, flexible, and affordable devices that deliver more power per unit of weight.

How Was the Study Conducted?

A key strength of this research is access to Nazarbayev University's advanced experimental facilities. The university's multipurpose high-current pulsed ion accelerator supports both fundamental and applied research, delivering an ion current of 10,000 amperes in 100-nanosecond pulses, with proton energies of up to 400 keV. Organic solar cells were fabricated at NU's research facilities using a wide range of deposition systems. By combining device fabrication and radiation testing within one research environment, NU enables researchers to investigate how solar cell materials respond to radiation and develop more resilient technologies for space applications.

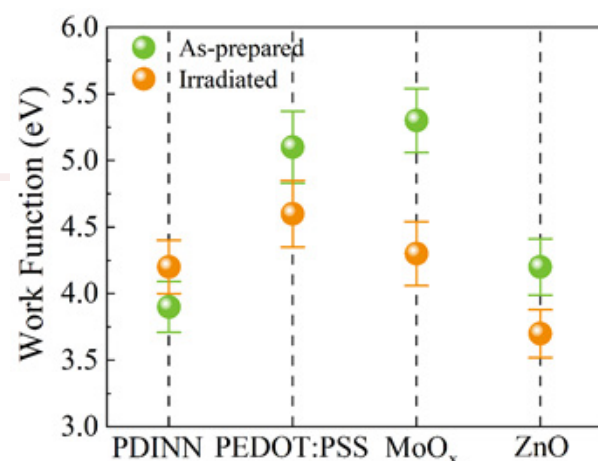


Fig. 2. Work function of the transport layers before and after proton irradiation.

Results and Evidence

The evidence shows that the design of an organic solar cell's charge-transport layers plays a crucial role in its resistance to proton radiation. We compared conventional and inverted devices with the same light-absorbing material. After exposure to 140 keV

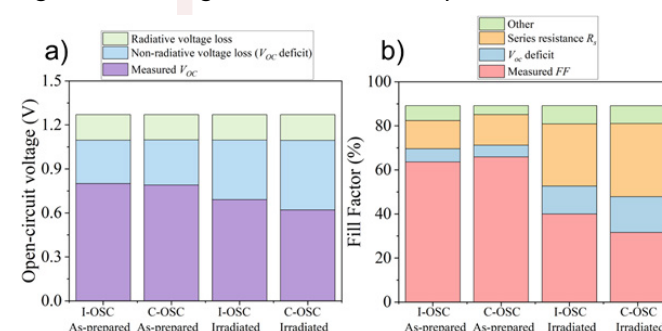


Fig. 3. (a) Breakdown of open-circuit voltage losses and (b) fill factor losses.

protons at a fluence of approximately 10^{12} protons/cm², inverted devices showed greater radiation resistance. Our analysis indicated over four times more charge-trapping defects at the interfaces of irradiated conventional devices.

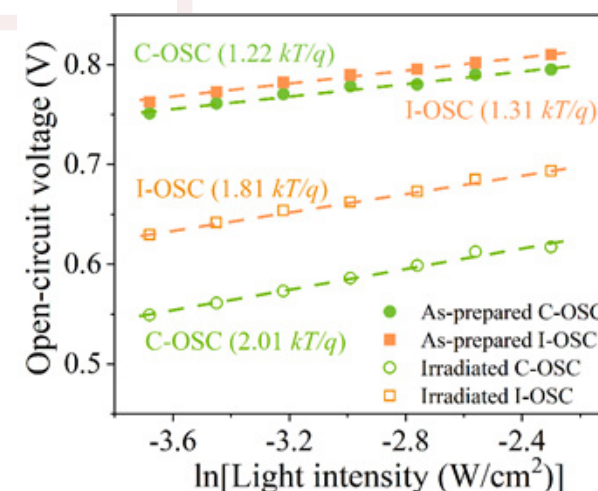


Fig. 4. Open-circuit voltage as a function of the logarithm of the light intensity

Heating the damaged cells at 110 °C partially restored their performance, with more effective recovery in inverted devices. These findings identify interface design as a key route towards more radiation-resistant organic solar cells for future space applications.

Benefits and the Impact of the Research

Organic and perovskite solar cells are emerging technologies with potential for space applications because of their low weight and potentially low manufacturing costs. As the number of satellites grows, so does the demand for lightweight and affordable power systems. As Kazakhstan develops its own space program, these solar technologies could help power future satellites and support the country's ambitions in space.

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Every material, like every person, has its own unique qualities.”

What's Next?

The next stage of our research will focus on developing and testing organic and perovskite solar cells under temperature cycles representative of space conditions, for example from -100 °C to +100 °C, depending on the intended orbit. We plan to evaluate how repeated heating and cooling affect their efficiency and durability. Further studies could combine thermal cycling with proton and electron irradiation to better assess their suitability as lightweight power sources for satellites.

Student AI Resistance in Kazakhstan

Dr. Alejandro Acuyo Cespedes & Dr. Matthew Gordon Ray Courtney



iD Alejandro Acuyo Cespedes



iD Matthew Gordon Ray Courtney

Research Question

To what extent do university students in Kazakhstan accept (or resist) their own or their teachers' AI use? And what factors, including their English proficiency, shape this acceptance or resistance?

Status Anxiety and Trust in Kazakhstani Higher Education

Universities are rapidly promoting generative AI for personalized learning and assessment, yet this often rests on the assumption that students will accept it once its usefulness becomes clear. Less is known about why students resist AI, particularly in English as a medium of instruction (EMI) universities where language proficiency signals academic status. This gap matters across Kazakhstan, Central Asia and the wider international research community because misreading student trust could undermine the sustainability of AI adoption policies in higher education.

MIMIC Model for Predictors of Student Acceptance of Own and Teacher Use of Generative AI

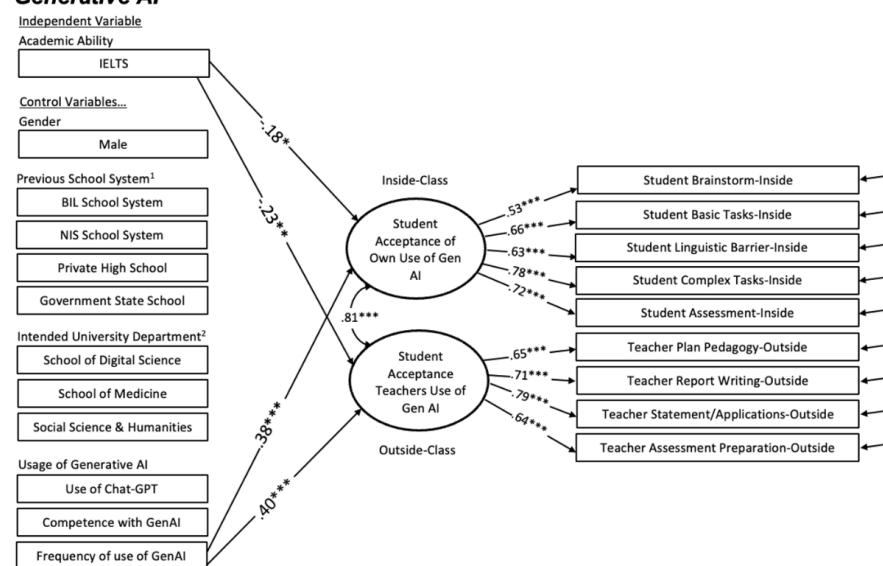


Fig. 1. MIMIC Model for Predictors of Student Acceptance of Own and Teacher Use of Generative AI. All paths are standardized; non-statistically significant paths are suppressed; $p < .05$, $*p < .01$, $***p < .001$.

Measurement Model for Student Acceptance of Self- and Teacher-Use of Generative AI

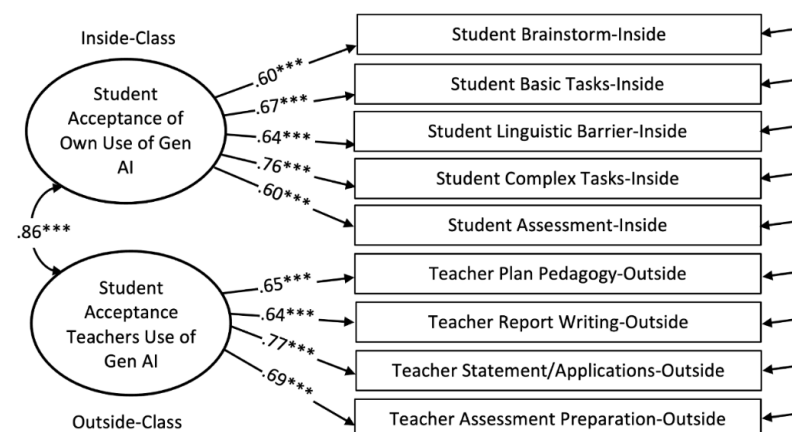


Fig. 2. Measurement Model for Student Acceptance of Self- and Teacher-Use of Generative AI. All paths are standardized; non-statistically significant paths are suppressed; $p < .05$, $*p < .01$, $***p < .001$.

How was the Research Performed?

Researchers surveyed 208 foundation-year students (aged 18-21) at an EMI in Kazakhstan through an online Qualtrics questionnaire. Likert-scale items targeted students' acceptance of AI for classroom learning tasks and of teachers' AI use outside class, such as grading, lesson planning and reference letters. Self-reported IELTS scores served as a proxy for English proficiency. The data was analyzed using confirmatory factor analysis and MIMIC structural equation modeling in R, controlling for gender, prior schooling and intended major.

Results and Evidence

The evidence shows students broadly resist AI use in the classroom, especially for assessment tasks (mean 0.80 of 4) compared with brainstorming (mean 2.00 of 4). Students were more supportive of their teachers using AI for lesson planning and professional development than for writing student reports or reference letters. Notably, students with stronger English proficiency showed notably greater resistance to both their own AI use and their teachers' AI use. At the same time, more frequent personal AI use predicted greater acceptance of both. Model fit indices confirmed these patterns were robust across two statistical estimation methods.

A Question

of TRUST

Benefits of the Research

University leaders, policymakers and instructional designers in Kazakhstan and other EMI institutions can use these findings to move beyond blanket AI bans or endorsements. The study also contributes towards the Unified Theory of Acceptance and Use of Technology (UTAUT) by adding a fairness and status sensitive lens that is applicable to competitive academic settings. Recognizing that resistance reflects status anxiety and perceived fairness concerns, not just unfamiliarity with AI, allows universities to design context-sensitive policies. These should permit supportive AI use while restricting it in high-stakes assessment, as well as introducing transparent disclosure when teachers use AI for grading or reference letters.

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The concept of performance positionality, whereby resistance to a technology is driven by competitive status concerns rather than its perceived usefulness, is proposed as a theoretically productive extension to existing models.

What's Next?

The authors call for larger, multi-institutional studies that directly measure status anxiety and competitive threat rather than inferring them. Future research should also delve deeper into AI acceptance from the teachers' perspective.

Predicting How CO₂ Is Trapped Underground



SCHOOL OF
ENGINEERING

Ilya Bayanov, Irina Spivakova, Peyman Pourafshary, and Masoud Riazi



Peyman Pourafshary,
Corresponding author

Research Question

How effectively can physics-guided machine learning, built on engineered dimensionless parameters, predict the long-term distribution of CO₂ among supercritical, dissolved, residually trapped, and mineralized states in heterogeneous carbonate saline aquifers?

Physics-guided machine learning using engineered dimensionless parameters to predict CO₂ trapping indices in heterogeneous carbonate saline aquifers

Long-term geological CO₂ storage depends on knowing how much injected carbon remains mobile and how much becomes dissolved, residually trapped, or mineralized. Full-physics reservoir simulations can provide this information, but they are computationally expensive and difficult to use for rapid screening across many scenarios. The study addresses this gap with a faster, physics-guided approach relevant to evaluating saline-aquifer storage options worldwide, including emerging carbon-management projects in Kazakhstan and Central Asia.

How Was the Study Conducted

NU researchers built a three-dimensional radial model of a heterogeneous carbonate saline aquifer using CMG-GEM and CMOST. They ran

“By combining reservoir physics with machine learning, we can screen many CO₂ storage scenarios rapidly while preserving the physical meaning needed for responsible engineering decisions.”



DOI / Publication Link

Highlights

- Different machine learning models were applied to predict CO₂ trapping indices in saline aquifers.
- Physics-guided dimensionless groups were used as inputs to guide the ML framework.
- Symbolic regression was used to derive explicit equations for CO₂ trapping indices.
- CatBoost achieved the highest R² and the lowest RMSE across all trapping mechanisms.
- SHAP analysis revealed distinct dominant controls for each CO₂ trapping mechanism.

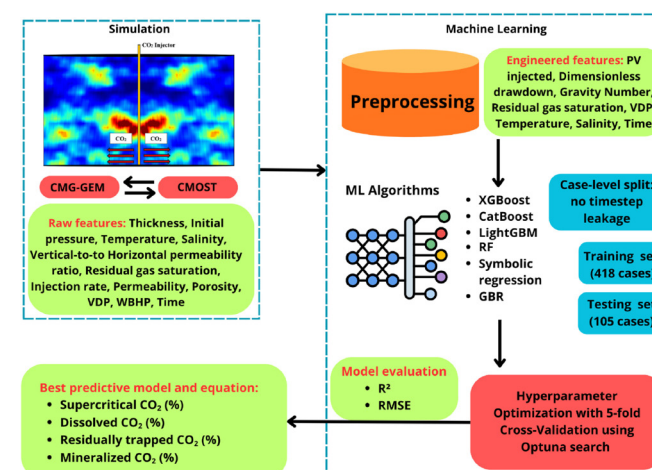


Fig. 1. Flow chart of the methodology.

523 scenarios over 200 years, varying key reservoir, operational, and heterogeneity parameters. The simulations produced 33,472 time-step records. Physics-based dimensionless features were used to train and test six machine-learning models, including CatBoost and symbolic regression. Cases were split into 418 for training and 105 for testing, preventing records from the same scenario from entering both datasets.

Results and Evidence

The evidence shows that CatBoost was the strongest performer across all four outcomes. On the independent test set, it achieved R-squared values of approximately 0.94 for supercritical and dissolved CO₂ and 0.92 for residual and mineral trapping. Symbolic

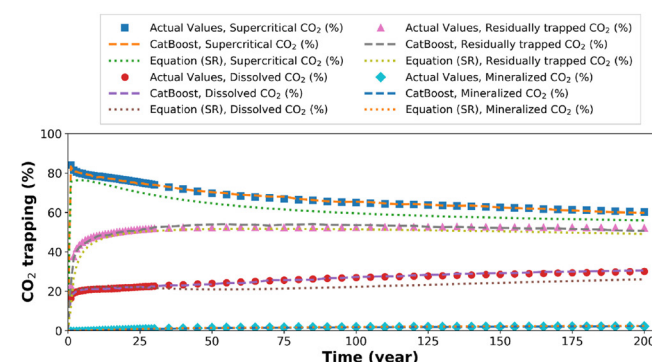


Fig. 2. Comparison of the CMG-simulated and CatBoost- and SR-equation-predicted SCI, STI, RTI, and MTI.

regression also produced explicit equations, with test R-squared values of about 0.87–0.92. SHAP analysis linked each mechanism to different controls: salinity dominated dissolution; residual gas saturation and time governed residual trapping; time and temperature shaped mineralization; and elapsed time and salinity strongly influenced the supercritical fraction.

Benefits and the Impact of the Research

The framework could help reservoir engineers, carbon-storage developers, regulators, and researchers compare candidate scenarios faster than repeated full-physics simulations. It supports preliminary site screening, sensitivity analysis, uncertainty studies, and rapid comparison of operating conditions within the modeled reservoir class. For Kazakhstan and Central Asia, where decarbonization and subsurface-resource expertise intersect, such tools could strengthen early technical assessment of geological CO₂ storage while reserving expensive simulations for the most promising cases.

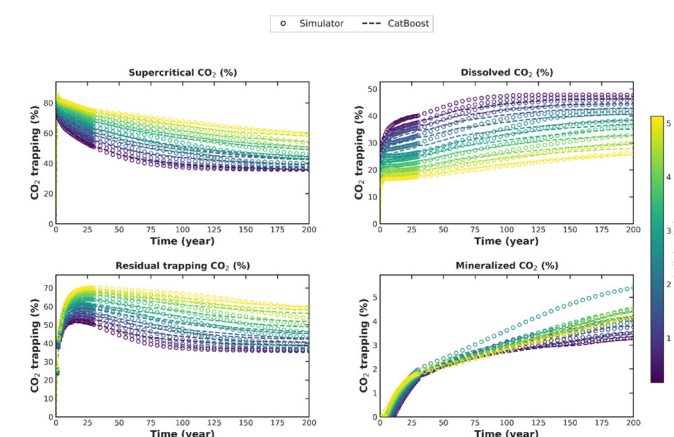


Fig. 3. Simulator-based sensitivity checks for the effect of salinity on CO₂ trapping indices. Open circles represent numerical simulation results, while dashed lines represent CatBoost predictions.

What's Next?

Future work will extend the framework to field-scale datasets and test its robustness under real geological and operational conditions. The authors also propose adding geomechanics, caprock properties, richer heterogeneity descriptors, broader geochemical sensitivity analysis, and stronger embedded physical constraints.

POST 2022

Political Instability Governance Failure Emerging Migration in

PAKISTAN

Syed Asad Abbas Bokhari



iD Syed Asad Abbas Bokhari

Research Question

“How do political instability and governance failures following Pakistan’s 2022 regime change shape international migration decisions, particularly among skilled and middle-class citizens?”



Third World Quarterly

DOI / Publication Link



Political Instability, Governance Failure, And The Emerging Migration Paradigm In Post-2022 Regime Change In Pakistan

Political instability and weak governance can drive skilled citizens to leave their countries, creating serious consequences for human capital and institutional development. This study addresses a gap in migration research by examining how political grievances, institutional distrust, and governance failures influence migration beyond economic motivations. The findings offer broader insights for Kazakhstan, Central Asia, and other countries seeking to strengthen institutions, retain skilled professionals, and build public trust.

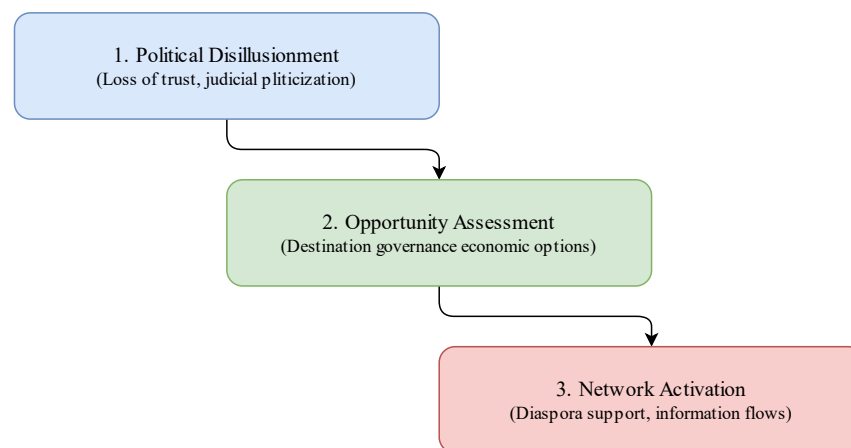


Fig. 1. Exploratory three-phase migration framework derived from participant narratives in post-2022 Pakistan.

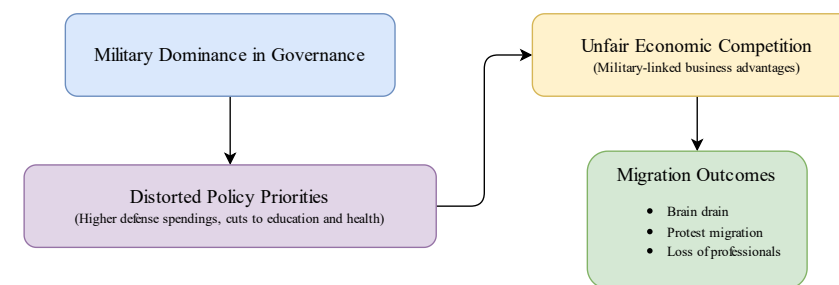


Fig. 2. Military shadow governance drives migration.

How Was the Study Conducted?

The study used a qualitative research design to examine migration following Pakistan’s 2022 political transition. Researchers conducted in-depth interviews with 28 participants, including migrants, governance and migration experts, and policymakers, complemented by focus group discussions in major Pakistani cities and analysis of policy and institutional documents. Participants were selected through purposive and snowball sampling. The collected evidence was analyzed using reflexive thematic analysis with NVivo to identify patterns linking governance experiences, institutional distrust, and migration decisions.

The Impact of the Research

The findings are relevant to policymakers, migration researchers, public institutions, and governments seeking to retain skilled professionals and strengthen institutional trust. They suggest that reducing brain drain requires more than economic incentives, because migration decisions may also reflect concerns about institutional fairness, policy stability, and governance quality. The study has wider relevance for Central Asia and other politically changing contexts by showing how stronger, more predictable institutions can support human capital retention and reduce governance-related pressures for migration.

“States do not lose their skilled people only because better opportunities exist elsewhere. They also lose them when citizens stop trusting that their institutions can provide fairness, stability, and a secure future.”

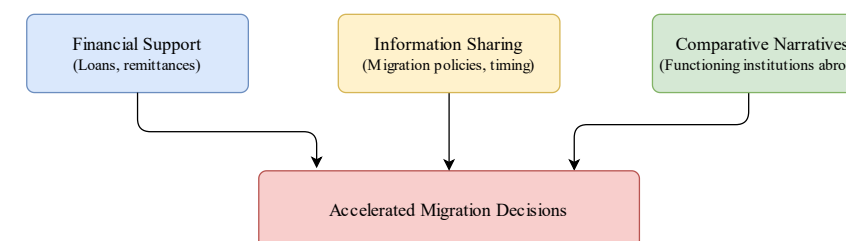


Fig. 3. Role of diaspora networks in accelerating migration.

Results and Evidence

The evidence shows that political and governance concerns played a major role in participants’ migration decisions, extending beyond conventional economic motivations. Among the 28 participants, 18 had considered migration before 2022 but described the political transition as a trigger that accelerated their decision, while 10 began considering migration after the transition. Participants highlighted institutional distrust, policy uncertainty, judicial politicization, and governance failures. The study also identified a three-phase migration pathway: institutional disillusionment, opportunity assessment, and network activation, showing how diaspora networks can facilitate and accelerate migration decisions.

What Happens Next?

The next stage is to test the study’s three-phase migration framework across other countries experiencing political instability or democratic backsliding. Comparative and larger-scale research can assess whether institutional disillusionment, opportunity assessment, and network activation represent broader patterns of governance-related migration beyond Pakistan.

Seizure Threshold Management in Drug-Resistant Epilepsy



SCHOOL
OF SCIENCES
AND HUMANITIES

Alexander Trofimov, Ksenia Shcherbakova, Alexander Schwarz, Burkitkan Akbay, Orynbasar Karapina, Zhuldyz Myrkhiyeva, Egor Shirokov, Bauyrzhan Kizatov, Kudiyar Zhukanov, Ayaulym Baktursyn, Madina Isseyeva, Aliya Namiyaliyeva, Alexey Sarapultsev, Maria Komelkova, Oleg Lookin, Tursonjan Tokay



iD Tursonjan Tokay

Anti-Inflammatory And Antioxidant Strategies In Epilepsy: From Molecular Mechanisms To Threshold Management

Drug-resistant epilepsy affects about one-third of people with epilepsy. Standard treatment mainly targets the immediate excitatory/inhibitory imbalance, but many patients remain without stable seizure control. Our review asks whether three interconnected processes, neuroinflammation, oxidative stress and mitochondrial dysfunction, should be considered together as additional contributors to a persistently low seizure threshold. This problem is relevant internationally and also for epilepsy research and clinical practice in Kazakhstan.

Research Question

How can neuroinflammation, oxidative stress, and mitochondrial dysfunction be integrated with conventional seizure mechanisms to improve management of drug-resistant epilepsy?



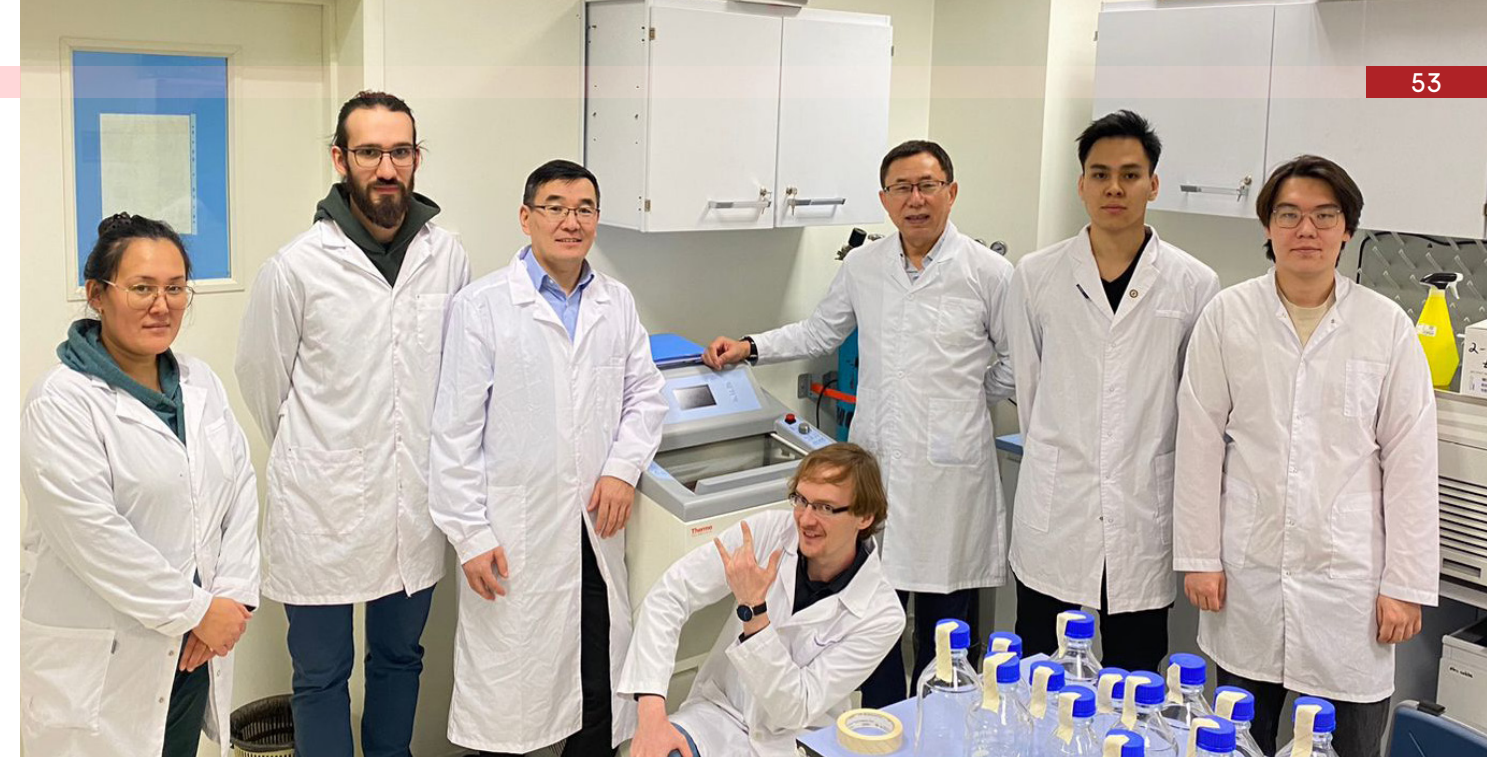
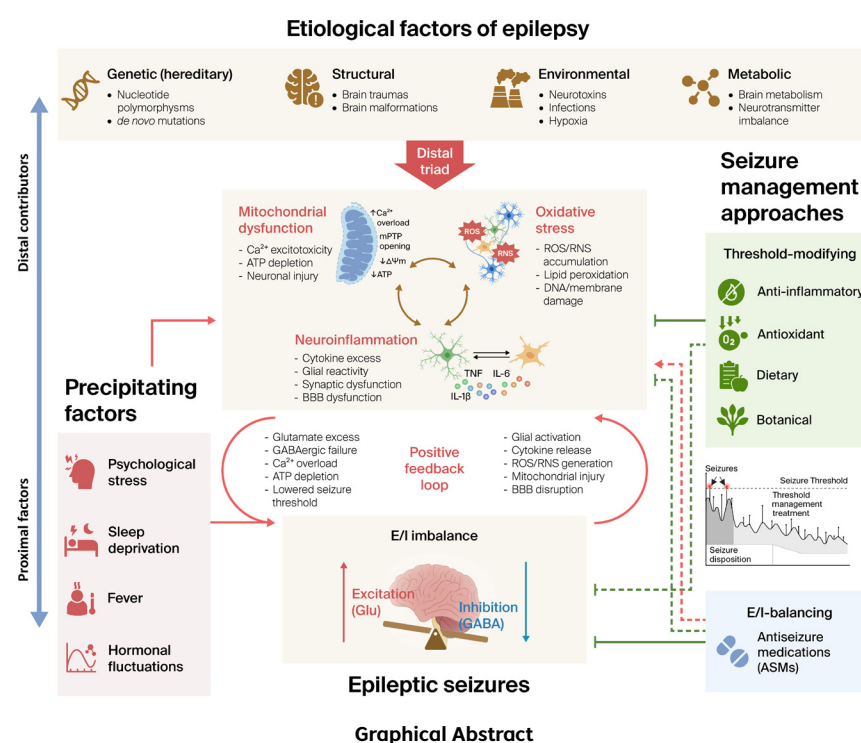
Review
Anti-Inflammatory and Antioxidant Strategies in Epilepsy: From Molecular Mechanisms to Threshold Management

Alexander Trofimov, Ksenia Shcherbakova, Alexander Schwarz, Burkitkan Akbay, Orynbasar Karapina, Zhuldyz Myrkhiyeva, Egor Shirokov, Bauyrzhan Kizatov, Kudiyar Zhukanov, Ayaulym Baktursyn, Madina Isseyeva, Aliya Namiyaliyeva, Alexey Sarapultsev, Maria Komelkova, Oleg Lookin, Tursonjan Tokay



International Journal of Molecular Sciences (IJMS), 2026, 27(15), 6606. Published 24 July 2026

DOI / Publication Link



Pic. 1. Research Team

“

One-third of patients still do not achieve stable seizure control. We think epilepsy management should look beyond immediate neuronal excitability and also consider inflammation, oxidative stress and mitochondrial function.”

Alexander Trofimov,
Corresponding Author

How the Study Was Conducted?

This work was performed as a narrative mechanistic-translational review by researchers from Nazarbayev University and collaborating institutions. We searched PubMed/MEDLINE and Google Scholar up to March 2026 and prioritized peer-reviewed primary studies, clinical trials, observational studies and recent mechanistic reviews relevant to epilepsy, seizure susceptibility and drug resistance. No new patient or animal samples were collected. The evidence was organized around mechanisms, therapeutic modulation and translation into a threshold-management framework.

Results and Evidence

The evidence shows that neuroinflammation, oxidative stress and mitochondrial dysfunction are closely connected with each other and with recurrent seizures. Together, we describe them as a distal triad that can maintain seizure susceptibility beyond the immediate excitatory/inhibitory imbalance. We also show that conventional ASMs can influence these pathways, sometimes beneficially and sometimes unfavorably, while anti-inflammatory, antioxidant, dietary and botanical interventions may modify them. Clinical evidence remains uneven. We therefore propose mechanistic phenotyping, precipitant tracking, dual-mechanism drug development and trial designs better adapted to multicomponent interventions.

The Impact of the Research

The review is relevant to epileptologists, neuroscientists, pharmacologists and researchers developing adjunctive treatments for drug-resistant epilepsy. Its practical value is to organize a fragmented literature into one framework and to show where translation currently fails. For researchers and clinicians in Kazakhstan and elsewhere, it provides a basis for linking behavioral monitoring, inflammatory and metabolic biomarkers, and existing or repurposed therapies rather than testing each component separately.

What is the Next Step?

Our next step is literature-based. We plan a systematic review and meta-analysis of inflammatory, oxidative-stress, and mitochondrial biomarkers measured in different biofluids in epilepsy. We also aim to explore advanced statistics and machine-learning approaches to identify biomarker patterns potentially associated with seizure susceptibility, threshold instability, and DRE.

Mentoring For Well-Being In Language Teacher Education



GRADUATE
SCHOOL
OF EDUCATION



D. Philip Montgomery,
Corresponding Author

D. Philip Montgomery, Luqing Zang, Carlo Cinaglia, and Peter I. De Costa

Research Question

How can mentoring relationships between language teachers and teacher educators help navigate—and even reshape—institutional demands that affect teacher well-being?

The
Modern Language
Journal

Volume 110 • Number 3 • Autumn 2018
Devoted to research and discussion about the teaching
and learning of foreign and second languages



The Modern Language
Journal

DOI / Publication Link

Research Highlights

- Teacher well-being is shaped by institutional practices, not individual resilience alone.
- Conflicting expectations can undermine teachers' agency and emotional well-being.
- Relational mentoring helps teachers navigate and reframe institutional pressures.
- Lasting change requires embedding care into policies, evaluation, and teacher education.

Mentoring For Well-Being In (Un)Caring Institutions: Possibilities And Limitations For Language Teacher Education

Language teachers' well-being is increasingly shaped by institutional demands—evaluation frameworks, standardized language, competing priorities—that can override person-to-person care. Existing research on teacher well-being often treats institutional policy and everyday practice separately, leaving unclear how or if the two connect. This gap matters internationally, and particularly in contexts such as Kazakhstan, where language teacher education is an essential aspect of institutional reform.

This study explores how language teacher well-being, as an ecological phenomenon that includes layered (un)caring prac-

tices, is shaped through institutional discourses and mentoring relationships across three distinct contexts. Using a participatory multiple case study design, we analyze narrative and textual data from three mentoring pairs in which we participated as language teacher educators: one with a veteran professor in Kazakhstan and two with U.S.-based pre-service teachers. Drawing on discourse analytical principles of framing, interdiscursivity, and rescaling, we show how institutional documents shaped teacher and teacher educator roles, and impacted well-being as they navigated institutional expectations.

How the Study Was Conducted?

Using a participatory, critical discourse-analytic case study design, the authors examined three long-term mentoring relationships in which they served as teacher educators: one with a veteran university professor in Kazakhstan, and two with pre-service teachers in the United States. Drawing on narrative accounts and institutional documents, they analyzed how each mentoring pair framed institutional problems and negotiated the meanings of terms such as "professional," "student-centered," and "quality."

The Impact of the Research

The findings speak to teacher educators, mentors, and program administrators seeking to support language teachers navigating demanding institutional environments. By showing that mentor-teacher relationships can be levers for institutional change, the study offers language teacher education programs—including those in Kazakhstan and Central Asia—a model for building more dialogic, caring professional cultures, rather than treating well-being as an individual responsibility separate from institutional structures.

Results and Evidence

The evidence shows that mentoring conversations became sites where institutional language was actively reframed rather than simply accepted or internalized. Across the three cases, mentors and teachers built hybrid, "interdiscursive" understandings of contested terms, and mentors' care-oriented practices sometimes scaled upward—shaping how institutional expectations were interpreted or challenged—and other times scaled downward into more caring classroom relationships. The authors also identify real limits, such as how mentors' capacity to buffer institutional pressure depended on their own position, relationships, and the institution's openness to being questioned.

“

"Mentoring is often misunderstood as support for individuals, but it is so much more. Mentoring conversations create small, often invisible spaces where institutional language about care, quality, and professionalism gets amplified, dismissed, and reinterpreted, one conversation at a time."

What Happens Next?

The authors call for further research examining how mentoring-based rescaling could be intentionally cultivated within teacher education programs, and how institutions might formally recognize mentoring as a mechanism for organizational, not just individual, change.

More **Autonomy** New **Identity** ?

The Story Of Kazakhstan's Regional Universities

Ahmet Aypay, Dana Yembergenova, Aida Sagintayeva, Murat Ozdemir



iD Ahmet Aypay,
Corresponding author

Research Question

How do regional universities redefine their identity following the 2018 formal autonomy? What are the different trajectories of redefining given practical constraints?



Higher Education

DOI / Publication Link



Negotiating Organizational Identity Under Symbolic Autonomy: Evidence From Regional Universities In Kazakhstan

Regional universities are often overlooked despite their important role in regional development and workforce preparation. As autonomy increases, they are expected to become more entrepreneurial and internationally competitive while responding to local needs. The Kazakhstan experience shows that meaningful autonomy requires adequate resources, effective governance, and academic participation, not simply legislative change. Regional embeddedness can also be a strength, allowing universities to draw on local communities, histo-

“
“Autonomy May Change How A University Is Governed, But Identity Shapes Who The University Becomes.”
”

ries, and cultures to develop distinctive identities while adapting to broader reform pressures. The 2018 reform in Kazakhstan granted public universities institutional autonomy, changing the landscape of higher education (HE) and placing regional univer-

sities in a strong competition for students, funding, and relevance. This study investigates how regional universities in Kazakhstan attempt to reconstruct their organizational identity amid intensified competition and evolving governance. Research results identify key institutional factors, including ongoing ministerial oversight, reliance on state funding, rigid accountability systems, and weak internal governance structures, that shape and constrain universities' strategic choices.

Change process	Predominant dimensions of cases	Strategic intention	Constraints under symbolic autonomy	Resulting identity trajectory
Designed (purposeful) change	Case A: The tension between image and interpretation.	Building a position as a globally competitive research university.	Financial dependence on the state, a rigid hierarchy, and a lack of essential material resources (e.g., laboratory equipment).	Selective Adaptation
	Case B: The tension between image and integration.	Serving as a regional provider while adhering to global academic standards.	Overregulation, resource scarcity, and uncompetitive salaries lead to staff turnover.	Identity-Image Decoupling
	Case C: Lack of integration and innovation.	Structural modernization and restructuring to surpass the status of national universities.	Excessive state control (rigid ministerial KPIs) and organizational disruptions stemming from past institutional mergers/divisions.	Identity Fragmentation
	Case D: The tension between image and innovation.	Establishing a globally connected regional hub through internationalization and academic mobility.	Financial insecurity triggered by market-oriented survival behaviors and isolation from local government (Akimat) planning.	Disconnected Adaptation
Organic (emergent) change	Case E: The harmony between interpretation and integration	Solving urgent local socio-ecological problems by drawing strength from cultural heritage and values.	Bureaucratic constraints were mitigated through creative leadership based on high trust and the collective participation of faculty.	Organic Identity Adaptation

Table 1. Configurations of organizational identity under symbolic autonomy

How Was the Study Conducted?

The study was conducted at the Nazarbayev University Central Asian Research Center for Educational Innovation and Transformation (CARCEIT) with support from the ICEP grant [number GSE2023004]. Data were collected from five regional universities. Focus group discussions with 40 participants and 23 individual interviews were conducted. The researchers conducted interviews with administrators and faculty members.

Impact of the Research

The study may benefit regional universities in their institutional development. The study also provides a strong case for university identity at the international level. There have been reforms around the world, and universities try to adapt to these changes by redefining their identities. The study provides important insights into how these changes take place.

Results and Evidence

Kazakhstan's university reforms have expanded formal autonomy, but regional universities remain constrained by state funding, accountability requirements, limited resources, and governance capacity, creating what we call symbolic autonomy. Our study of five regional universities shows that these constraints also shape organizational identity. While four universities pursued research excellence, internationalization, and external prestige, tensions emerged between projected images and faculty's everyday experiences. One university followed a different path, grounding its identity in regional culture, heritage, and community needs. The findings show that meaningful autonomy requires resources, participation, and governance capacity, while regional embeddedness can strengthen institutional identity and organizational renewal.

What Happens Next?

Kazakhstan's regional universities have gained formal autonomy but remain constrained by funding dependence, accountability, and limited resources. These conditions create symbolic autonomy and shape organizational identity. The study highlights that meaningful autonomy requires stronger governance, academic participation, and resources, while regional embeddedness can strengthen institutional identity and renewal.

A wide-angle photograph of the main building of Nazarbayev University at dusk. The building is a large, modern structure with a prominent central dome and several smaller domes on the wings. The facade is illuminated with warm lights, and the name 'NAZARBAYEV UNIVERSITY' is visible in large letters above the entrance. The sky is a mix of blue and purple, indicating twilight. The foreground shows a paved plaza with some landscaping and small trees.

CONFERENCES AND EVENTS

Events, conferences and moments
that shape the research community
at Nazarbayev University

AIDME-2026

International Conference on AI & Digital Modeling in Energy



SCHOOL OF
ENGINEERING



NAZARBAYEV
UNIVERSITY
NATIONAL
LABORATORY ASTANA

Date and location:

5–8 August 2026, Nazarbayev University, Astana, Kazakhstan

General Chair of the Conference Organizing Committee:

Prof. Yanwei Wang

Organizers and partners:

School of Engineering (SoE), National Laboratory Astana (NLA), and Institute of New Materials and Energy Technologies (INMET), Nazarbayev University, in collaboration with the Qazaq International Science and Technology Association (QIST). The conference was supported by China National Petroleum Corporation (CNPC), the NU 2026 Conferences Call, and NU Impact Foundation.

Homepage: <https://nla.nu.edu.kz/aidme2026>

AI And Digital Modelling Across Energy

Single-track sessions connected scientific machine learning, trustworthy AI, multiscale and multiphysics simulation, digital twins, and high-performance computing with applications in hydrogen, energy materials, geothermal systems, reservoir modelling, multiphase flow, and environmental remediation.

Launch of InterPore Kazakhstan Chapter

The first InterPore national chapter in Central Asia was officially launched on 5 August. Prof. Ann Muggeridge delivered the keynote “How Core-Scale Heterogeneity Affects Field-Scale Geological CO₂ Storage,” and Prof. Masoud Riazi and Dr. Sagyn Omirbekov were selected as Co-Chairs for a two-year term.

CCUS, Industry, And Emerging Researchers

The 2nd China-Kazakhstan Symposium on Carbon Capture, Utilisation and Storage and Oil & Gas Innovation Technologies strengthened academic-industry exchange. Poster sessions and laboratory visits presented work by university researchers and early-career participants. Finalists from our Computational & AI Research in Energy (CARE) Initiative, a four-week online programme that engaged around 200 high-school students, presented posters, and three teams received awards.

Event Highlights

AIDME-2026 connected researchers using artificial intelligence, digital modelling, and computational science across the energy value chain. Under the theme “Connecting Science, AI & Energy Worldwide,” participants examined how physics-based, data-driven, and hybrid approaches can improve scientific understanding, prediction, design, and optimisation while maintaining reliability, interpretability, validation, and scientific rigour.



Participants

The four-day event brought together approximately 120 researchers, faculty members, students, and industry specialists from universities, research institutes, national laboratories, companies, and professional organisations in Kazakhstan and abroad. The programme featured 18 keynote and invited speakers with affiliations in Kazakhstan, China, the United Kingdom, France, Germany, Latvia, and the United States.



NAZARBAYEV
UNIVERSITY
INSTITUTE OF NEW
MATERIALS AND ENERGY
TECHNOLOGIES

Pic. 1. Group photograph of speakers, participants, organizers, and student volunteers following the opening ceremony of AIDME-2026 at Nazarbayev University, Astana, 5-8 August 2026

Speakers

Prof. Ann Muggeridge (Imperial College London; President-Elect of InterPore), Prof. Weihua Li (Fudan University), Prof. Jiajia Zhou and Prof. Xian Kong (South China University of Technology), Prof. Longlong Li (Institute of Mechanics, Chinese Academy of Sciences), Prof. Zhongqi Lyu (China University of Petroleum), Prof. Donovan Chaffart (Eastern Institute of Technology, Ningbo), Prof. Aidarkhan Kaltayev (Satbayev University), Dr. Stéfan Colombano (BRGM, the French Geological Survey), and Thomas Oppeneau (JV KATCO LLP).



KEY Figures

4

Conference
Days

120

Participants

18

Keynote And
Invited Speakers

36

Scheduled Oral
Presentations

36

Poster
Presentations

200

Students Trained
Through Our
CARE Initiative
Programme

“

"AIDME-2026 showed the value of bringing physics-based modelling, artificial intelligence, and experimental research into one conversation. The connections established at Nazarbayev University in Astana, particularly through the launch of InterPore Kazakhstan, provide a strong foundation for sustained collaboration across disciplines, institutions, and countries."

Dr. Sagyn Omirbekov, Leading Researcher, National Laboratory Astana, and Co-Chair, InterPore Kazakhstan



Significance

AIDME-2026 demonstrated Nazarbayev University's capacity to convene international and cross-disciplinary communities around regional and global energy challenges. It raised the visibility of NU expertise, gave students direct access to leading researchers and industry specialists, presented student-led research to an international audience, and created channels for sustained collaboration through InterPore Kazakhstan, QIST, and participating partner institutions.



Pic. 2. InterPore launch - Prof. Ann Muggeridge with InterPore Kazakhstan Co-Chair Dr. Sagyn Omirbekov during the chapter launch on 5 August 2026.



Pic. 3. Emerging researchers – CARE Initiative finalists and university researchers presenting posters in the Upper Atrium during AIDME-2026, where 36 research posters facilitated active exchange among researchers, students, and industry participants



Pic. 4. Scientific program - A keynote or technical session illustrating exchange across AI, digital modeling, and energy research.

Outcomes

The conference established an interdisciplinary platform linking artificial intelligence, physical modelling, and energy research; launched the InterPore Kazakhstan Chapter; and strengthened connections among Nazarbayev University, international universities, research organisations, and industry. Participants identified opportunities for follow-up work in CCUS, hydrogen, porous media, advanced materials, and scientific machine learning. The new chapter also provides a continuing structure for community building, student engagement, and future joint activities.

INESS-2026

14th International Conference on Nanomaterials and Advanced Energy Storage Systems



NAZARBAYEV
UNIVERSITY



Date and location:

5–7 August 2026, Nazarbayev University, Astana, Kazakhstan

Organizers and partner institutions:

Institute of New Materials and Energy Technologies (INMET), Nazarbayev University, National Academy of Sciences of the Republic of Kazakhstan under the President of the Republic of Kazakhstan, Institute of Batteries LLC

Homepage: <https://iness.kz/iness-2026/>

INESS-2026 was organized to bring together leading researchers, industry experts, and young scientists to discuss recent advances in nanomaterials and energy storage technologies. The event focused on innovative materials, next-generation batteries, electrochemical energy storage, and emerging technologies, addressing key challenges in performance, safety, sustainability, and the development of advanced energy-storage systems.

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At Nazarbayev University, we strive to advance world-class research and strengthen international cooperation. INESS exemplifies how bringing together scientists from different countries helps find solutions to key scientific and technological challenges of our time.”

Professor Waqar Ahmad,
President of Nazarbayev
University



Pic. 1. INESS-2026 Opening Ceremony: Bringing Together an International Community of Researchers

Participants

This year, INESS-2026 was distinguished by an exceptionally high level of international representation and scientific excellence, bringing together 270 participants, including leading scientists, researchers, industry experts, young researchers, and representatives of major universities, research institutions, and high-tech companies. Participants represented Japan, the European Union, the Republic of Korea, the United States, Canada, China, Russia, and other countries across Asia, Africa, and the Americas.

Invited speakers include Professor Jeff Dahn, a pioneer in lithium-ion batteries; Professor Rachid Yazami, inventor of the graphite anode for lithium-ion batteries; Professor Shinichi Komaba, one of the world's leading experts on sodium-ion batteries; and others.

Key Speakers

included internationally recognized scientists such as Prof. Jeff Dahn (Dalhousie University, Canada), Prof. Seung-Taek Myung (Sejong University, Korea), Prof. Sung-Soo Kim (Chungnam National University, Korea), Prof. Nae-Lick-Wu (National Taiwan University, Taiwan), Prof. Shinichi Komaba (Tokyo University of Science, Japan), Prof. Sarbajit Banerjee (ETH Zürich and Paul Scherrer Institute, Switzerland), Prof. Artem Abakumov (Skolkovo Institute of Science and Technology, Russia), Wen-Bin Cai (Fudan University, China), Prof. Maksym Myronov (The University of Warwick, UK), Prof. Naoki Yabuuchi (Yokohama National University, Japan) and other leading experts in nanomaterials, batteries, and advanced energy-storage technologies.



Event Highlights

Industrial Session: From Raw Materials To High-Value Technologies

From Raw Materials to High-Value Technologies: Commercialization and Industrial Transformation

The industrial session brought together researchers, industry representatives, and technology developers to discuss the transition from raw materials and scientific discoveries to commercially viable high-value technologies. Key topics included commercialization pathways, innovation, technology transfer, industrial transformation, and opportunities for strengthening collaboration between academia, research institutions, and industry.



Prof. Zhumabay Bakenov, General Director of INMET, Chairman of INESS-2026, delivering his opening address at the conference

Keynote Presentation: Modern Silicon-Carbon Materials

Advanced Silicon-Carbon Materials for Next-Generation Batteries

Professor Emeritus and Principal Investigator of the NSERC/Tesla Canada/Dalhousie Alliance Grant, presented "Modern Chemical Silicon Carbon Materials Are Amazing." His presentation highlighted recent advances in silicon-carbon materials and their potential to improve the performance and energy density of next-generation lithium-ion batteries.



Jeff Dahn
Professor Emeritus, Principal Investigator
- NSERC/Tesla Canada/Dalhousie
Alliance Grant

International Scientific Presentations And Discussions

Emerging Advances in Nanomaterials and Energy Storage

The scientific sessions featured presentations by leading international researchers on emerging nanomaterials, advanced batteries, electrochemical energy storage, and related technologies. Discussions addressed current scientific challenges, innovative approaches, material design, performance improvement, and future directions for sustainable and high-performance energy-storage systems.



Seung-Taek Myung, Editor, Journal of Power Sources, Professor, Faculty of Nanotechnology and Advanced Materials Engineering, Sejong University (South Korea)

“

Just twenty years ago, virtually all attention was focused on lithium-ion batteries. Today, we are actively researching new types of batteries, as society's needs will be different in 10, 20, or 30 years. That is precisely why fundamental research into energy storage is of critical importance. Sodium-ion batteries represent one of the most promising areas today, and many countries, including Kazakhstan, are actively developing this technology.”

Key Outcomes

INESS-2026 strengthened international scientific and industrial collaboration in nanomaterials and advanced energy-storage technologies. The event facilitated new contacts between researchers, universities, research institutions, and industry representatives, generating ideas for joint research, technology development, and commercialization. Discussions identified opportunities for knowledge exchange, technology transfer, and future collaborative projects, with follow-up activities focused on developing partnerships and advancing innovative energy-storage solutions.



Pic. 2. INESS-2026 Conference Participants



Shinichi Komaba, Professor at Tokyo University of Science, Japan

Significance

INESS-2026 enhanced Nazarbayev University's international visibility and strengthened its position as a platform for advanced energy-storage research and scientific collaboration. The event provided researchers and students with opportunities to exchange knowledge with leading international experts, establish professional networks, and explore joint research opportunities. It also strengthened connections between academia, industry, and the wider energy-storage research community.



ICMR-2026

23rd International Conference on Manufacturing Research

NAZARBAYEV
UNIVERSITY

SCHOOL OF
ENGINEERING

KAZZINC

ICMR
INTERNATIONAL CONFERENCE ON MANUFACTURING RESEARCH

Date and location:

2–4 September 2026, Nazarbayev University, Astana, Kazakhstan

Organizers and partner institutions:

Nazarbayev University - School of Engineering (SoE); originally initiated by the Consortium of UK University Manufacturing Engineering Heads (COMEh); Gold Sponsor: Kazzinc

Homepage: <https://seds.nu.edu.kz/icmr2026>

ICMR 2026 brought researchers, academics, and industry leaders together to exchange knowledge on advanced and digital manufacturing engineering. Celebrating its 40th anniversary, the conference focused on how emerging technologies, including additive manufacturing, AI-driven automation, and Industry 4.0, can transform manufacturing into a driver of economic growth.



Professor Waqar Ahmad, President of Nazarbayev University



Conference inauguration; Photo credit: ICMR Team

Participants and Speakers

The programme featured seven international plenary and keynote speakers: Prof. Ronan Daly (University of Cambridge, UK), Prof. Yusuf Altintas (University of British Columbia, Canada), Prof. Konstantinos Salonitis (University College Dublin, Ireland), Prof. Fethi Abbassi (American University of the Middle East, Kuwait), Prof. Ahmed Qureshi (University of Alberta, Canada), Dr Mozafar Saadat (University of Birmingham, UK), and Dr Ahmed Maged (American University of Sharjah, UAE). The industry-academia panel also featured Prof. Bjorn Birgisson (NU Vice Provost for Research and Innovation), alongside senior representatives from Alstom, Air Liquide, and Wabtec. The conference attracted more than 100 participants and featured over 60 paper presentations.



Professor Rehan Sadiq, Provost of Nazarbayev University; Photo credit: ICMR Team

Event Highlights

Industry-Academia Panel: "Made In Kazakhstan: Can We Build A Manufacturing Nation?"

Moderated by Dean of School of Engineering, Prof. Essam Shehab, the panel examined how Kazakhstan can leverage its mineral, gas, and oil resources to develop a globally competitive manufacturing base. Prof. Bjorn Birgisson (NU), Prof. Yusuf Altintas (UBC), and industry leaders from Alstom, Air Liquide, and Wabtec Kazakhstan discussed investment in foundational industries, workforce development, supply-chain capacity, and stronger university-industry collaboration.

Keynote Lectures On The Frontiers Of Manufacturing Research

Seven plenary and keynote presentations over two days explored precision and micro/nano-manufacturing, AI- and data-driven design, and sustainable manufacturing. The presentations were delivered by leading researchers from world-class universities such as the University of Cambridge, University of British Columbia, University College Dublin, University of Alberta, and University of Birmingham.

Parallel Research Sessions

More than 60 papers were presented across parallel tracks covering additive manufacturing, Industry 4.0, robotics and mechatronics, and supply-chain management. The Best Paper Award was presented to Ziyad Sherif and Shoaib Sarfraz of the University of Birmingham's Sustainable Manufacturing Group, which contributed three papers to the conference.



(second from the left) Yusuf Altintas, Distinguished Professor of Mechanical Engineering, University of British Columbia. He presented the best paper awards to the winners.



Industry-Academia Panel: Speaker:
Professor Bjorn Birgisson
Vice Provost for Research and
Innovation; Photo credit: ICMR Team

Moderator: Professor Essam Shehab, ICMR
General Chair and Dean of the School of
Engineering, Nazarbayev University; Photo credit:
ICMR Team

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"It was an excellent conference filled with exciting research and discussions. We saw a great future ahead when we met ambitious, brilliant, and engaged undergraduate and postgraduate students. It is such an exciting place to be!"

Plenary Speaker:
Prof. Ronan Daly (University
of Cambridge, UK); Photo
credit: ICMR Team



KEY FIGURES

Celebrating
ICMR

40

anniversary at Astana and only the second time after Sweden, the conference has been held outside the UK.

7

international keynote speakers from institutions in the UK, Canada, Ireland, UAE, and Kuwait

Over

60

papers presented to more than 100 participants

3

-day programme (2-4 September 2026) featuring plenary keynotes, an Industry-Academia panel, and multiple parallel research tracks

Accepted papers will be published by

Springer
Nature

and indexed in Scopus, Web of Science, and EI Compendex



Key Outcomes

ICMR 2026 reinforced Nazarbayev University's position as a hub for manufacturing research in Kazakhstan and Central Asia. Accepted papers will be published in Springer Nature's Lecture Notes in Mechanical Engineering and indexed in Scopus, Web of Science, and EI Compendex. The Industry-Academia panel also initiated dialogue between NU and manufacturers, including Alstom, Air Liquide, and Wabtec Kazakhstan, on future collaboration and developing the manufacturing capabilities of Kazakhstan.

Significance

Marking its 40 anniversary and only the second edition held outside the UK, the ICMR 2026 conference highlighted Nazarbayev University's ambition to lead manufacturing research in Kazakhstan and to advance sustainable and technology-driven manufacturing. It connected NU students and researchers with leading international academics and industry leaders, strengthening Kazakhstan's pathway from research to industry and from innovative ideas to practical impact.



OPPORTUNITIES & PUBLICATIONS

Research funding calls, academic opportunities and selected publications for the NU community

Research Funding Opportunities



NAZARBAYEV
UNIVERSITY
RESEARCH
ADMINISTRATION

2026 Calls

Four NU programmes for international collaboration, new faculty, doctoral research and industry partnerships.

NU Seed Collaboration Grants Program

Up to **USD 25,000**

from each party | 1:1 matching funds

Project duration: 12 Months

Purpose: Build joint research initiatives and prepare for future national and international funding.

Who Can Apply?

The Program is available to NU faculty members at the rank of Assistant Professor or above.

Research teams may include researchers from Nazarbayev University and an approved partner university in China or the United States, or a German university and/or institution supported by the German Research Foundation (DFG).

Application Deadline
October 26, 2026

Program Guidelines and supporting application documents are here



International Collaboration SCGP



Doctoral Research Support Program

USD 14,000 / year

PhD student salary supplement

Duration: Up to 4 years

Research Costs

USD 3,000 per year – Social Sciences, Humanities and Management

USD 6,000 per year – STEM and Medicine

Who Can Apply?

The Program is available to Faculty Lead Supervisors at the rank of Assistant Professor or above.

Application Deadline
November 15, 2026
with subsequent deadlines on the 15th of every second month.

Program Guidelines and supporting application documents are here



Doctoral Research

DRSP



New Faculty Research Program

Up to **USD 25,000 / year**

Project duration: Up to 24 months

Purpose: Establish a research programme, build a team and generate preliminary results for future funding applications

Who Can Apply?

The Program is available to new faculty members at the rank of Assistant Professor or above who joined NU this academic year.

Application Deadline
November 15, 2026

Program Guidelines and supporting application documents are here



Industry Matching Grants Program

Up to **USD 100,000 / year**

At least a 1:1 cash funding match with the NU contribution

Project duration: Up to 18 months

Costs related to equipment, software, core facility services, spare parts or accessories must be covered exclusively by the Industry Partner's cash contribution and cannot be financed from Program funds.

Who Can Apply?

The Call is open to NU faculty members at the rank of Assistant Professor or above, and approved and designated researchers from NLA, ISSAI, INMET, UMC, and NAC. Each proposal must represent a collaborative research project between an NU School/Center and an industry partner.

Application Deadline
December 15, 2026

Program Guidelines and supporting application documents are here



APPLICATION

Detailed information on the Program requirements, application and evaluation process, funding, and reporting is provided in the Program Guidelines and supporting application documents, available via this [link](#).

SUBMIT YOUR PROPOSAL

Please submit your application via the [Pure system](#).

QUESTIONS?

Please contact Pre-Award Operations at preaward.nura@nu.edu.kz.

External Research Funding Opportunities

We are pleased to share a curated list of international research funding opportunities that may be of interest to you. All listed opportunities have been pre-checked by Pre-award Operations Office of NURA and are open to applications from Nazarbayev University.



Source selection: August 2026 | Follow links for current call details

Medicine

Technology Impact Award

Cancer Research Institute (CRI)

Deadline: 16/11/2026

up to **\$600,000**

[More details](#)

Medicine

Innovation Seed Fund

RNID Royal National Institute for Deaf People

Deadline: 06/11/2026

up to **£10,000**

[More details](#)

Myopia

CooperVision Seedling Award

CooperVision

Deadline: 31/12/2026

\$100,000

[More details](#)

Medicine, Dream Science

Joint IASD/DreamScienceTM Foundation

The International Association for the Study of Dreams
Deadline: 15/10/2026

\$5,000

[More details](#)

Medicine

Clinical Innovator Grant

Cancer Research Institute (CRI)

Deadline: 01/12/2026

\$1,000,000

[More details](#)

Medicine

The Translational Award

The Brain Tumour Charity

Deadline: 25/11/2026 (Stage 1*)

£400,000

[More details](#)

STEM

Training and Research in Italian Laboratories (TRIL)

The Abdus Salam International Centre for Theoretical Physics
Deadline: 31/12/2026

€1,600

[More details](#)

Medicine

AACR-Debbie's Dream Foundation Gastric Cancer Innovation and Discovery Grant

American Association for Cancer Research (AACR)
Deadline: 01/11/2026

\$100,000

[More details](#)

Linguistics

Major Documentation Project (MDP)

Endangered Languages Documentation Programme
Deadline: 01/10/2026

€10,000 - €300,000

[More details](#)

Art History

Research and travel grants

Henry Moore Foundation

Deadline: 01/11/2026

£20,000

[More details](#)

General

VISITING GROUPS AT ZIF

The Center for Interdisciplinary Research (ZIF: Zentrum für interdisziplinäre Forschung)

Deadline: 29/10/2026

€50,000

[More details](#)

Archaeology

Site Preservation Grant

Archaeological Institute of America

Deadline: 01/11/2026

\$15,000

[More details](#)

Medicine

Clinical cancer research grants

Rising Tide Foundation (RTF)

Deadline: 15/12/2026

\$300,000

[More details](#)

Medicine

AND AWARENESS PROPOSALS

ResMed Foundation

Deadline: 23/11/2026 (LOI)

up to **\$1,000,000**

[More details](#)

Read Carefully before planning your application. Application windows and eligibility vary by programme. Feel free to contact Pre-award Operations Office of NURA for further information.

PRE-AWARD OPERATIONS OFFICE

Phone: +7 (7172) 69 48 27, 69 45 38, 69 47 19

Office Location: Block C4, 2nd floor, Office 265

Explore Further Funding Routes

Accepts applications on a rolling basis

Further opportunities across health, STEM, engineering, digital technologies and development. Select a programme to explore the funder's guidance.



Source selection: August 2026 | Follow links for current call details

Medicine C.H.I.L.D.R.E.N! Research Program The Jeffrey Modell Foundation \$25,000 More details	Computer science, engineering Internet Freedom Fund Open Technology Fund (OTF) \$10,000 - \$900,000 More details	General FID - Call for Proposals Fund for Innovation in Development €50,000 - €6,250,000 More details
STEM Targeted Grants in MPS Simons Foundation \$ not stated More details	Medicine Focused Ultrasound Foundation Research Awards Focused Ultrasound Foundation \$ not stated More details	Medicine Research and education grants MedEvac Foundation International \$ not stated More details
Engineering Research and development enabling fund Institution of Civil Engineers (ICE) £25,000-£50,000 More details	STEM Research Ireland Discover Programme - Opportunistic Funding Mechanism The Science Foundation Ireland \$ not stated More details	Medicine New investigator award Foundation for Angelman Syndrome Therapeutics (FAST) \$150,000 per year More details

Medicine FAST - Trac Award Foundation for Angelman Syndrome Therapeutics (FAST) \$150,000 per year More details	Medicine Innovation Seed Grant Foundation for Angelman Syndrome Therapeutics (FAST) \$10,000 - \$50,000 More details	General Project Funding Li Ka Shing Foundation \$ not stated More details
Medicine New Ideas – Request for Applications Simons Foundation \$600,000 More details	General Research Funding Henry Luce Foundation \$ not stated More details	Sociology Sociology on Stage Kohli Foundation €2,000 More details
Economics, Public Policy, Governance, Civil society Freedom in practice Rising Tide Foundation (RTF) \$ not stated More details	Medicine Grant Adenoid Cystic Carcinoma Research Foundation Pilot grants - up to \$50,000 Full grants \$100,000 - \$300,000 More details	Medicine Research Grant Program A-T Children's Project \$75,000 More details
Medicine Science and Technology Awards CooperVision \$100,000 More details	Sociology Sociology Backstage Kohli Foundation €2,000 More details	PRE-AWARD OPERATIONS OFFICE Phone: +7 (7172) 69 48 27, 69 45 38, 69 47 19 Office Location: Block C4, 2nd floor, Office 265

Research Support Hub

by NU Library

NU Research Data Repository - New Research Service

Nazarbayev University Library is pleased to announce the launch of the **NU Research Data Repository (RDR)** a platform designed to support the management, preservation, and sharing of research data produced by the NU research community.

Key features

- Secure preservation of research data and associated research outputs;
- Support for open and embargoed access to datasets;
- DOI assignment for published datasets;
- Support to comply with Data Availability Statement requirements;
- Alignment with FAIR data management practices;
- Improved discoverability, visibility, and citation of research data;
- Long-term access and reuse of research outputs.

Contact the Library Research Support Office to get assistance throughout the research lifecycle, including Data Management Plans (DMPs), research data management processes, metadata preparation, and dataset submission, and guidance on depositing and publishing research data at library@nu.edu.kz



NAZARBAYEV
UNIVERSITY
LIBRARY

The NU Research Data Repository is an official institutional platform for securely preserving, publishing, and sharing research datasets. It supports researchers in addressing publishers' Data Availability Statement (DAS) requirements and aligns with international best practices for research data management and the FAIR Principles (Findable, Accessible, Interoperable, and Reusable).

Researchers can deposit and publish datasets, receive Digital Object Identifiers (DOIs), and enhance the visibility, accessibility, and citability of their research outputs.

The Research Data Repository is available to members of the NU research community and supports a wide range of research data formats and disciplines.

Global Open Access Week 2026 at NU Library: The Cost of Knowledge

19 - 23 October 2026

Nazarbayev University Library annually celebrates **International Open Access Week**, held from **19 to 23 October 2026** under the theme "The Cost of Knowledge."

The week-long programme highlights NU's commitment to open access and provides faculty, students, and staff with opportunities to learn, engage, and reflect on the future of knowledge sharing.

Access to and the sharing of knowledge are fundamental rights, yet the costs associated with accessing and disseminating knowledge continue to rise.

Open access is particularly important in Kazakhstan, helping ensure that research from our region is visible, discoverable, cited, and used rather than remaining behind access barriers.



Email
library@nu.edu.kz



Office
Library 3rd floor, 5E.323



Programme Highlights

Date	Session Title	Description	Format & Status
19 Oct	RA Bootcamp: Publish- ing Your Research in Open Access	A two-hour workshop on structuring research and conference papers, navi- gating journal selection, and publishing open access.	Registration link 5E.438 Active Learning Room. 18.00 - 20.00. Coffee break served.
19 Oct	Copyright and Licensing Essentials	Master Creative Commons licenses, make smart pub- lishing choices, and align your academic work with NU and global open access policies.	Registration link 5E.417 Computer Lab. 11:00 - 11:30
20 Oct	Publisher Session with Wiley: AI, Integrity, and Open Access	Part 1: Using AI responsibly, mechanics, risks, and proper declaration. Part 2: Open access publish- ing benefits and the Wiley Forward Series.	Limited Spots – Register early! Online Session. Registration link 14.00 - 15.00
21 Oct	Preprints, postprints, and copyright in open science	We invite colleagues from libraries in Kazakhstan to a practical session on infor- mation literacy.	Registration link 16.00 - 17.00 Coffee break served. 5E.228 Library Conference Hall. In Russian.
22 Oct	14th Eurasian Academic Libraries Conference (EALC 2026)	Research Workshop session The Academic Library in the Digital Research Landscape: Practical Tools, AI, and Emerging Technologies for Researchers	No registration\fee for students. Comp lab 5E417. 14.30 -16.00. In Russian. Event link
19-23 Oct	Book Exhibition & Virtual Display	A curated selection of books and digital resources explor- ing open access, scholarly communication, and the cost of knowledge.	Library 2nd floor & Primo

Interviews in the Atrium

Look out for us in the atrium! We will be conducting short, informal interviews throughout Open Access Week, filmed for social media. The best answers will win NU merch.

New Research Publications



INDEXED IN SCOPUS

Explore Nazarbayev University Research in 2026

Nazarbayev University publications indexed in Scopus in 2026 span a wide range of disciplines, reflecting the diversity and interdisciplinary strength of the University's research community.

For easier navigation, the publications have been grouped into broad disciplinary areas based on the Scopus classification framework.

Explore publications by subject area

- Arts and Humanities
- Life Sciences
- Business and Economics
- Medical and Health Sciences
- Computer Science
- Physical Sciences
- Education Studies
- Psychology
- Engineering
- Social Sciences



VIEW THE FULL PUBLICATION LIST

Scan to explore all publications.



DEAR NU RESEARCHERS

We are always proud to share your achievements and news.

If you have a story to tell, we warmly invite you to submit it for publication in a future issue of the newsletter

Behind This Issue

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