



**To Dr. Talgat Yensepbayev
Head of Petroleum Geology
Satbayev University
Almaty, Kazakhstan**

Dear Dr. Talgat Yensepbayev,

This letter confirms that you have been nominated as a scientific collaborator on a Collaborative Research Grant funded by Nazarbayev University (hereinafter - NU).

A team of researchers from NU, led by Associate Professor Milovan Fustic, Principal Investigator, will research the topic: “Geothermal Energy Production (GEP), Energy Storage (ES), and Carbon Storage and Sequestration (CSS) Potential in Kazakhstan Sedimentary Basins – Geological Baseline Study”

The three year research project (2021-2023), was selected after a stringent review process by Oak Ridge Associated Universities (ORAU) in the US. This project received one of the highest rankings from over 90 applications across all schools at NU.

The ultimate aim of this study is to do a scientific screening and assessment of Kazakhstan’s sedimentary basins and to identify GEP, ES, and CSS play fairways of high potential for further research and potential industrial-level development. As such, this, and similar baseline geological studies may form a foundation to position Kazakhstan as a world leader in green economies, which in return would not only allow for reaching international commitments for reducing GHG emissions (i.e. Paris Agreement), but also create numerous high quality job opportunities nationwide and secure a cleaner and healthier living environment.

The successful employment of GEP, ES, and CSS technologies highly depends on geological conditions. Conditions such as laterally extensive and good quality reservoirs with impermeable caprock are necessary for each one of them. Thus, exploration and characterization activities can be done simultaneously.


Although GEP, ES, and CSS potential of Kazakhstan’s 13 sedimentary basins must be huge, none of these technologies have been tested or utilized yet. Additionally, multidisciplinary baseline geological and detailed site-specific characterization and feasibility studies are missing. The search for, and characterization of potential GEP, ES, and CSS subsurface sites is very similar to the search for and characterization of petroleum reservoirs. Thus, the best practices and exploration and development concepts are readily transferable. Innovative solutions such as proposed in situ CO₂ transformation to liquid needs to be evaluated in reservoir context.

Подписи ЭЦП проверены, НУЦ РК
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Results and discoveries from fundamental and applied research topics are expected to be published in leading scientific journals including Geology, Nature, Science, Basin Analysis, Sedimentology, Green Chemistry, Dalton Transactions, Inorganic Chemistry, and Organic Geochemistry. It is further expected that findings will inspire more studies on related topics and create spin off and start up opportunities.

The roles and responsibilities of collaborating partners include:

- 1) Completion of CITI Ethics training (or alternative), as required by NU for all internal and external researchers, to ensure compliance with international standards of ethical research;
- 2) Guiding the review of country-based empirical and policy literature;
- 3) Contributing to jointly authored local and international publications;
- 4) Assisting in the design of the research project and the data collection process, including the design of data collection instruments and guidance on appropriate research sites;
- 5) Guiding the data analysis and development of research findings;
- 6) Guiding the implementation of the plan for publication and dissemination of research results at various stages of the project, including local and international conference participation.

The grant budget, as outlined in the grant call does not allow for the payment of salaries to partner universities, however, research assistants have been appointed to work directly with collaborating partners. Funds have been budgeted for travel associated with the project for data collection and participation in local and international conferences when papers related to the project are being presented. The budget document and original grant call documents are available in the project google drive, accessible by all collaborating partners.

It is hoped that this partnership will facilitate the development of future research grant applications and shared work between our universities. A website is under construction to provide a site for the dissemination of information about the project and to celebrate the involvement of all partners in this critical research.

The research will be conducted in accordance with the standards of scientific ethics of the Institutional Research Ethics Committee of Nazarbayev University, which guarantee confidentiality, anonymity and the rights of participants, including the right to refuse to participate in the research at any stage of the project.

If you have any questions about the project, you can contact Principal Investigator, Milovan Fustic, at milovan.fustic@nu.edu.kz, +77785616382, or postdoctoral fellow Dr. Ashirgul Kozhagulova at ashirgul.kozhagulova@nu.edu.kz.

We welcome your involvement in this project. We aim to produce a positive and productive, mutually beneficial partnership that will facilitate shared understandings, shared professional and institutional growth and the production of contextually relevant research knowledge in Kazakhstan.

We would be grateful if you could confirm participation and acceptance of the conditions of this collaboration in a letter addressed to the Principal Investigator.

Sincerely,

Provost

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