

RESEARCH

Research Services Office Newsletter

Issue 12, November 14, 2016



NEWSLETTER HIGHLIGHTS

Dear colleagues and students!

We are happy to announce the start of a new season of our Research Newsletter series! We hope that you had a very productive summer and ready to achieve new research height this year and the Research Services Office is more than happy to help you through the process.

This issue begins with the *In the Spotlight* column with the interview with the winners of the Horizon 2020 grant Vasileios Inglezakis and Talgat Nurgozhin, who will share some useful advice on how to win a Horizon 2020 grant.

We also will share with you news about major research events happened when we were on a break. This issue also contains plenty of useful research information like available funding opportunities and open calls, insights of PURE, NU evaluation by SciVal, etc.

Don't pass by the *New Publications* and *Congratulations* columns and use the chance to compliment your colleagues with their new achievements.

As you turn the pages in this year, you will notice many new features like the column *My Projects*, where any researcher of NU can share information about his or her project with NU Community.

We hope you enjoy every page in this newsletter. We welcome your feedback and look forward to continuing to bring you research-related news, resources, and other information.

Sincerely,
Research Team

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IN THE SPOTLIGHT

Interview with Vasileios Inglezakis and Talgat Nurgozhin, winners of the Horizon 2020 grant



European Commission

Research Team: Dear Colleagues thank you for agreeing to have an interview with us and share your experience in grant winning. First of all, can you please tell us about your project idea?

Vasileios Inglezakis: The title of our project is “Nanoporous and Nanostructured Materials for Medical Applications” – or NanoMed is the way we call it.

This project aims to stimulate intersectoral and international collaboration between European countries and Kazakhstan, in the area of novel nanoporous and nanostructured adsorbents for the treatment of serious health conditions associated with acute and chronic exposure to external radiation and uptake of heavy metals and radiation as a consequence of accidental, occupational or deliberate activities and events. This can dramatically lower the quality of life of the people affected and at present the treatment available is costly and inefficient.

Radioactive contamination is a particularly serious problem in two of the countries participating in this project,

namely, Ukraine and Kazakhstan, on large territories of the Chernobyl zone and around Semipalatinsk nuclear test site, respectively. A large number of people are affected by living in the areas with elevated level of radioactivity with uncertain long-term consequences to their health and the health of future generations.

The expected impact of the project results is development of efficient and cost-effective methods of protection of first responders, population and cancer patients treated with radiotherapy from elevated doses of external and incorporated radiation and for occupational health protection of personnel working and the population living in areas contaminated with heavy metals.

RT: How has the idea of the project started?

VI: The main initiator of the idea to create a research consortium for this project belongs to Prof. Sergey Mikhailovsky. With his support we created an international team of researchers from 10 countries (Spain, France, United Kingdom, Portugal, Greece, Hungary, Slovakia, Moldova, Ukraine, and Kazakhstan) to form a proposal for Horizon 2020 grant. Prof. Sergey Mikhailovsky left NU this year, but he is still supporting the project.

RT: Who are involved in the project from Nazarbayev University side?

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Talgat Nurgozhin: Center for Life Sciences (CLS - hereinafter), National Laboratory Astana and School of Engineering (SEng – hereinafter). I was indicated as a person in charge of the proposal in the official documents, main PI from Kazakhstan’s side and I will be the one who will sign the contract at the end of this year. However, a team of faculty members both from CLS and SEng was preparing the proposal for the project.

There also will be 2 new teams working in the project from SEng and CLS side. SEng is responsible for the first stage of the project – “synthesizing the materials”, which will last from one to two years and CLS is responsible for the second stage of it - “testing it on animals”, which will also last from one to two years.

RT: Did you succeed in winning this grant from the first time?

TN: No, we didn’t receive it at first. The first proposal on this project was submitted in 2015 and was rejected with the number of recommendations. We worked them out and submitted it again in 2016 and were awarded with the grant this summer. Money will come by the end of this year when the contract will be signed.

RT: What in your opinion are the most important things to pay attention when applying to Horizon 2020 Program? Can you please share some advices with our faculty members?

VI: In my opinion if you want to initiate a proposal for Horizon 2020 you need to start from a very strong consortium of renowned universities, research institutes and private entities from Europe. If you don’t have this solid team with whom you are in personal contact it



might be very problematic to succeed.

You also need to have a very strong idea of your project, which will be in the current scientific trends of the world.

Another necessary aspect when applying is being experienced in European projects. The more proposals you and your team members made in the past – the less mistakes you will do in the future. Experience is crucial in succeeding in Horizon 2020.

TN: Cannot agree more.

RT: What impact your project will have?

TN: There will be a number of positive outcomes that project will have. First of all, it will contribute to the development of new and lasting research collaborations resulting from the intersectoral and/or international secondments and the networking activities implemented during the project. Moreover, it will help to realize the potential of individuals and to provide new skills and career perspectives to all team members. The main idea of all international grants is staff and knowledge exchange. Each team will benefit as a group from knowledge sharing between the partners via staff secondments and collaboration in the project to achieve common goals.

The project provides valuable support both financially and in terms of human

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resources to the collaborations existing between participants and creates conditions for further development and verification of the ideas and concepts. The project consortium has unusual and unique complementarities of expertise and skills, which seldom come together in a single project. The consortium creates a critical mass of knowledge and expertise in medical sorbents for the whole chain of development for lab bench to industrial production and medical applications.

VI: The project will also contribute to the improvement of the research and innovation potential within Europe and worldwide.

It is expected that the new products developed in this project will pave the way to creating new activated carbonbased biomedical materials and devices for treatment of chronic and acute poisoning with heavy metals and incorporated radioactivity and to improving efficiency of cancer treatment using radiotherapy and reducing cancerogenic potential of radiation injuries.

The project strengthens the scientific and technological bases of the European industry of biomedical adsorbents and provides SMEs with competitive advantage in this highly competitive area. The expected products will be a result of collective efforts of top class academics and high tech companies thus promoting excellence of European research and putting it in the practical context.

For us, NU, it is a great opportunity to be the part of this process. The government of Kazakhstan has identified Nazarbayev University (NU – hereinafter) as the main driver of research innovation and

commercialization in this country. Currently extensive works are being carried out to create a TechnoPark on the NU territory, where office space, laboratories and technological building will be offered to national and international industry on favorable conditions in order to create a hub for manufacturing competitive commercial products for Kazakhstan and a much larger market of the Customs Union (which also includes Russia and Belarus) and neighbor Central Asian countries with the total population of over 200 million people and with the potential to enter the second largest world market of India. Kazakhstan hosts the World Expo 2017, and its authorities plan to provide financial support to the organizations that can develop products for this exhibition including the results of international collaboration. This is an interesting and potentially attractive opportunity for the consortium to expand its activities beyond Europe. By establishing and exploiting long-term benefits and synergies created during the term of the project, the partners will ultimately contribute to the declared position of increasing research expenditure in Europe.

RT: What will be your last words in this interview for our readers?

TN: We wish good luck to all NU Research Community who are applying for grants.

VI: And we are more than happy to share our experience with Horizon 2020 in case necessary via workshops or seminars.

RESEARCH NEWS

NLA, CASMI, Oxford and BGRF to develop the global health span extension initiative

National Laboratory Astana, Nazarbayev University announced its participation in a scoping study on Global Healthspan Extension Initiative in collaboration with Centre for the Advancement of Sustainable Medical Innovation (CASMI) University of Oxford, the Biogerontology Research Foundation (BGRF) and other international academic and industry thought leaders to develop strategic options for economic development focusing on extending productive healthy longevity of the population using latest breakthroughs in science and technology.

"The global health span extension program we are developing is first of its kind, but may serve as a model for other countries that are committed to innovation and technological progress. The idea is simple: identify the most promising technologies required to extend healthy productive longevity of the entire population to keep people healthier and more productive for as long as it is possible. To do that we partnered with the best minds from all over the world and conducted thorough analytical studies," said Zhaxybay Zhumadilov, General Director of the National Laboratory Astana, Nazarbayev University.

So far we completed two workshops, one invitation-only forum at the



University of Oxford and another in Astana at the Nazarbayev University. The forum in Astana coincided with the 4th International Conference on Regenerative Medicine and Healthy Aging and included a workshop, where first results of the scoping study were presented and reviewed by prominent scientists, industry players and policy makers including the head of CASMI Dr. Richard Barker, the former director of the Human Genome Project Dr. Charles Cantor and many others.

"What we see is emerging worldwide is the new productive longevity theory of economic growth. The number of senior citizens is rapidly increasing and if left unchecked will slow down growth even in countries where the majority of the population is young. However, if we keep the retired and retiring population healthy and engaged, we may see unprecedented economic growth," said

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Massimo Pignatelli, dean of School of medicine at Nazarbayev University.

The Global Healthspan Extension Initiative already attracted many innovative technology companies from the U.S, the U.K, Norway, Sweden, France and Germany, and resulted in perspective collaborations and partnerships with many companies indicating their intent to set up research and development offices in Kazakhstan for perspective longevity research.



Delegation from CASMI, University of Oxford, and BGRF during the workshop in Astana (May, 2016)

Governing for Autonomy: Framing the Challenges and Noting the Progress

SEMINAR AT THE GRADUATE SCHOOL OF EDUCATION

On September 19, 2016 research staff of Nazarbayev University Graduate School of Education, alongside Professor Matthew Hartley and Professor Peter Eckel from the University of Pennsylvania's Graduate School of Education, conducted an international conference entitled "Governing for Autonomy: Framing the Challenges and Noting the Progress".

There is good reason why this particular topic was chosen as the main theme of the Conference. Nazarbayev University Graduate School of Education in partnership with the University of Pennsylvania Graduate School of Education (USA) have been carrying out a research project entitled "Advancing Models of Best Practice in Academic Governance and Management in Higher Education Institutions in Kazakhstan" (*approved by NU Institutional*



Research Ethics Committee (IREC)) that focuses on a thorough study and analysis of the current governance reforms in HEIs in the Republic of Kazakhstan and will follow with developing recommendations in this area.

At the same time, currently the selected topic is particularly vital due to the fact

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that according to the State Program for Education and Science Development for 2016-2019 (hereinafter – SPESD) it is planned to implement measures aimed at enhancing management and monitoring of the development of higher and postgraduate education. The SPESD emphasizes the need to implement shared governance principles through the gradual expansion of the academic freedom, administrative and financial autonomy at HEIs. At the same time, issues related to the institutional autonomy and accountability have been raised in developed countries and by flagship universities in the world. Taking into account these aspects, the Conference provided a discussion platform for representatives of Kazakhstani universities leading the development of shared governance in their institutional settings. To conduct this event Nazarbayev University Graduate School of Education received approval from.

Leaders and representatives of Kazakhstani higher education institutions took part in the event. Discussions related to the aspects of developing shared governance in Kazakhstani higher education institutions: the best approaches to HEI management and

governance in the 10-year future, effective mechanisms for university management and governance, performance and accountability of governing boards, implementation of autonomy in higher educational institutions of Kazakhstan.

Karaganda State Technical University's Rector Arstan Gazaliev and Narxoz University's Rector Krzysztof Rybinski presented their cases in the Session "Toward Governance for Autonomy: "Live Case Studies". The two speakers outlined main strategies related to shared governance at their home universities. The presentations were well-received and followed with a lively discussion.

After the discussions and debates, the conference participants developed recommendations for further work on the development of institutional autonomy in Kazakhstani higher education system. Upon conducting a thorough analysis of the discussions held at the Conference, Nazarbayev University Graduate School of Education will prepare a white paper reflecting the insights of the Conference to the public.

Pacific Rim Meeting on Electrochemical and solid state science (PRiME)

REPORT

Between October 2-7, 2016 Director of the Center for Energy and Advanced Materials Science, Professor Zhumabay Bakenov and senior researchers of National Laboratory Astana, Dr. Almagul Mentbayeva and Dr. Anara Molkenova attended the Pacific Rim Meeting on Electrochemical and solid state science (PRiME) and presented their research works. PRiME is considered as the most significant research conference in the world, which is organized jointly by Electrochemistry society USA, Japan, Korea, Australia and China. The conference took place in the beautiful island Oahu in Hawaii, USA. This year, the event included 56 symposia and 4182 presentations with the highest number of participants (more than 4000).

Professor Zhumabay Bakenov gave a presentation on the innovative rechargeable aqueous lithium ion battery system, which was developed by his research group of "Advanced research materials and significant conference audience attention due to its environmental friendliness, extreme safety and outstanding storage properties. The research group of Professor Z. Bakenov currently focuses on the development of novel high-performance electrode materials for rechargeable aqueous Li-ion batteries with high energy and power

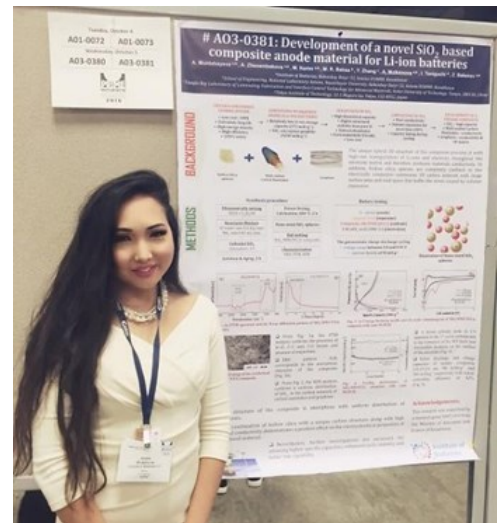


density, safety, low ecological impact, long cycle life and low cost.

Dr. Almagul Mentbayeva delivered a talk on the novel strategy of enhancing the performance of lithium-sulfur (Li-S) batteries by a simple modification of the battery separator. For the last several decades Li-S batteries has gained a huge interest due to their extremely high theoretical energy density and natural abundance. The research group of Professor Z. Bakenov has successfully developed and introduced into Kazakhstan's market a commercial prototype of Li-S battery technology with high energy density, low cost and good safety properties.

Dr. Anara Molkenova presented "Development of a Novel SiO₂ based composite anode material for Li-ion batteries" (left picture). The research group of Professor Z. Bakenov is also focused on the development of Si-based anode materials. Her presented work has received a lot of comments and

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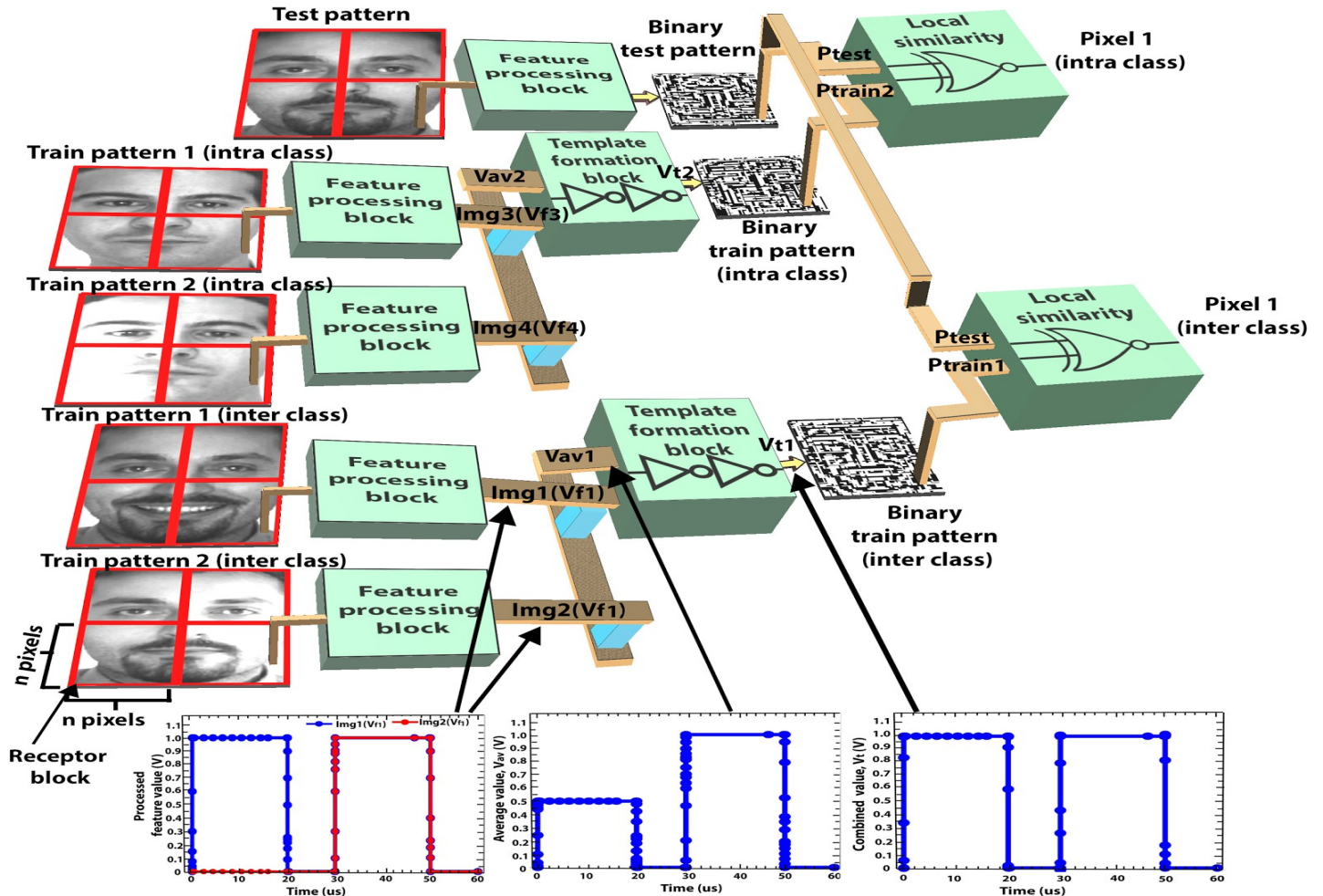
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suggestions by experts of the battery research field. Mr. J. Kuwabara, and Dr. K. Sato, Chief Engineers Technology Development Division of Honda R&D Co. expressed their interest in the research works on SiO₂ anode, and highlighted the importance of the research towards obtaining future high power electrodes for batteries from natural sand. This conference allowed to build an excellent platform for discussions with existing research collaborators future research plan on the development of a

new generation energy storage systems. Professor Z. Bakenov with colleagues had a possibility to discuss the joint research projects and further collaboration with Professor K. Kanamura and Professor H. Munakata from Tokyo Metropolitan University (Japan) and Professor S.-T. Myung from Sejong University, Korea (right picture). Also PRiME provided an excellent opportunity for building a strong scientific network with leading electrochemistry research groups from all over the world.

A new approach for on-chip implementation of hierarchical temporal memories

First CMOS-memristive analog HTM



NU researchers have developed a novel way to build analog HTM cells using CMOS-Memristive circuits. They successfully tested this approach of large scale circuit simulation and testing on challenging problems such as single sample face recognition and speech recognition problems under real-time conditions.

Hierarchical Temporal Memories (HTM) is inspired from the hierarchical, modular

and sparse information processing in the neocortex that mimics learning, recognition and prediction functions in analog and digital domains. The on-chip implementation of HTM for imaging problems remain as an open problem due to the complexity of processing frontend information from CMOS pixels to backend synaptic weight adaptation in analog domain.

In a new approach to develop a high-speed and generalised solution to

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designing HTM circuits, researchers at Nazarbayev University has developed a range of HTM circuits and systems for analog domain processing suitable for solving pattern recognition problems. Using the memristive devices that has interesting properties to mimic neural firing mechanisms, the researchers developed circuits for analog domain processing for face recognition, and speech recognition.

The researchers successfully demonstrated this approach on several set of standard face and speech recognition problems, and devised methods for large scale circuit simulation. The initial results are reported in 49th International Symposium on Circuits and Systems (ISCAS), the flagship conference of IEEE Circuits and Systems Society held in Montreal, Canada (see <http://ieeexplore.ieee.org/document/7527475/>).

“We have developed one of the first working hybrid CMOS-memristor analog circuits and array architectures for HTM, that could offer low area on chip and high speed processing, and can help develop practical brain on chip solutions”, says Alex Pappachen James, Associate

Professor in the NU department of Electrical and Electronics Engineering and the lead investigator at Bioinspired Microelectronics Systems Lab, who is one of the paper’s senior authors. Dhireesha Kudithipudi of Rochester Institute of Technology is also a senior author in this paper. The lead author is Timur Ibrayev, 3rd year undergraduate student studying electrical and electronic engineering in Nazarbayev University. The extended version of the work is under revision to be published in two leading journals, and is coauthored by first year MSc students Irina Fedorova and Olga Krestinskaya.

What is next?

The work is still on and the research group is aiming at building a whole working system that will find its application in image processing and recognition tasks. The work is carried out by the research staff and students in Bioinspired Microelectronic Systems Lab (www.biomicrosystems.info) in School of Engineering, and is collaborating with different aspects of the vision sensor and processing unit developments with researchers from Oxford University, Rochester Institute of Technology and Boise State University.

NLA hosted the delegation of the Joint Institute for Nuclear Research, Dubna, Russia

On June, 2016 Zhaxybay Zhumadilov, General Director, National Laboratory Astana, Nazarbayev University and Victor Matveyev, Director, International intergovernmental organization "Joint Institute for Nuclear Research" (JINR) signed a memorandum on cooperation in the sphere of scientific research and scientific activities.

In particular, the parties have agreed to conduct joint work in the field of physics and technology of high-energy charged particle beams; nuclear-physical methods of investigation of different materials and objects of the environment; use of heavy ion beams of high-energy radiation in the field of materials science; methods of X-ray analysis of materials; research methods of micro- and nano-objects; the use of charged particle beams of high energy to biotechnology, ecology and medicine; nuclear power; thermonuclear fusion; the development of nuclear and radiation medicine, formulation and use of radioactive isotopes to diagnose and treat diseases.

"In the framework of this cooperation is planned to organize joint scientific seminars, workshops, and joint participation of scientists in international projects. So this perspective collaboration will provide a spark to the development of nuclear science and technologies for the purpose of peaceful nuclear energy application in Kazakhstan," said Zhaxybay Zhumadilov.



Zhaxybay Zhumadilov, General Director, NLA and Victor Matveyev, Director, "Joint Institute for Nuclear Research" (JINR), Dubna, Russia.

"Kazakhstan occupies the prominent and worthy place among the JINR Member States. Kazakhstan vastly contributes to the development of education and science, and nurturing young staff. It's a beautiful example to follow," concluded the head of the Joint Institute for Nuclear Research Victor Matveyev.

During the visit the Dubna's delegation gave several presentation on JINR: structure, main direction of research, links and collaboration in Kazakhstan, including cooperation with Nazarbayev University. Also, the guests held a tour of NLA's facilities, and other research centers of the university.

For information: The Dubna's delegation visit to NU is the part of "Days of JINR at Kazakhstan" event. The Joint Institute for Nuclear Research is an international intergovernmental scientific research organization in the science city Dubna in the Moscow region. JINR has at present

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18 member states, including Kazakhstan. DC-60 cyclotron - heavy ion

accelerator - was built by the JINR in Astana and now celebrates its 10 year anniversary, as part of current "Days of JINR at Kazakhstan" event.

NLA and Insilico Medicine to develop integrated biomarkers of human aging

National Laboratory Astana, Nazarbayev University announced an agreement with Insilico Medicine to collaboratively study aging and age-associated pathologies.

"We are very happy to collaborate with Insilico Medicine, one of the leaders in applying artificial intelligence to aging research. At the Nazarbayev University we are generating vast amounts of data, including next generation sequencing, gut microbiome, genomic and metabolomic data. Healthy aging and healthspan extension is one of our main research priorities. Deep learning has revolutionized many areas including image and text recognition and is likely to advance many areas of biomedicine," said Zhaxybay Zhumadilov, General Director of the National Laboratory Astana, Nazarbayev University.

In the scope of the agreement, Insilico Medicine will provide advanced signaling pathway activation analysis services to evaluate differential changes between healthy tissues and those affected by disease as well as comparing tissues of different ages. In addition to signaling pathway analysis, parties intend to develop artificially-intelligent comprehensive biomarkers of human aging based on large sample data sets.

"Nazarbayev University is one of the most advanced universities in Eastern



Europe and Central Asia with state of the art equipment and highly qualified staff educated in top international universities. This institution is scouting for cutting-edge technologies and Insilico Medicine is delighted to be selected as one of the providers of high-technology solutions for longevity research," said Alex Zhavoronkov, CEO of Insilico Medicine, Inc, who was one of the speakers of the recently past the IV International conference on regenerative medicine and healthy aging, held at the National Laboratory Astana on 11-12 May, 2016.

About Insilico Medicine:

Insilico Medicine, Inc. is a bioinformatics

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company located at the Emerging Technology Centers at the Johns Hopkins University Eastern campus in Baltimore with R&D resources in Belgium, Russia and Poland hiring talent through hackathons and competitions. It utilizes advances in genomics, big data analysis and deep learning for in silico drug discovery and drug repurposing for aging and age-related diseases. The company pursues internal drug discovery programs in cancer, Parkinson's, Alzheimer's, sarcopenia and geroprotector discovery. Through its Pharma.AI division the company provides advanced machine learning services to biotechnology, pharmaceutical and skin care companies.



From left: Alex Zhavoronkov, CEO, Insilico Medicine, U.S.A and Zhaxybay Zhumadilov, General Director, NLA at the Conference on Regenerative Medicine and Healthy Aging in Astana, Kazakhstan (May 2016)

Brief company video can be found [here.](#)

Advancing the state-of-the-art research and care for children with Autism spectrum in Kazakhstan

by Chee Kai Chan (NUSOM) and Sofiya An (SHSS)

Autism Spectrum Disorder (ASD) is an early onset neurodevelopmental disorder characterized by impaired social interaction and communication ability, repetitive behaviors and restricted interest. In Kazakhstan, there is a growing concern due the increase in the number of children with ASD, and is complicated by the shortage of qualified staff who are trained to work with such children (Interfax Kazakhstan). Funded by the Asyl Miras Bulat Utemuratov Charity Foundation, new centres for children with autism are opened in Almaty and in Astana in 2015 and recently in Kzylorda and Oskemen to provide professional care and to help educate and promote the awareness and

understanding of this disorder.

Our research aim to evaluate the present educational and social support system in terms of their awareness, their readiness and their capacity in in aiding parents with children having ASD which will be important in providing recommendations for improvement. We have conducted two focus group discussion meetings with parents with autistic children here in Astana and in Almaty with plans to also engage with families of autistic children in other parts of Kazakhstan. We recently presented some of the preliminary findings at the 1st International conference "Autism. World of Opportunities" held in

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Nazarbayev University in October 2016.

Genetics has been shown to contribute a significant role in the development and the severity of those with ASD. We are also interested in uncovering the various common genetic variants (SNPs) affecting gastrointestinal conditions and Vitamin D metabolism in ASD children in Kazakhstan. We intend to find the differences in the prevalence of these SNPs in the control group as compared to children with ASD. We hypothesized that a nutritional intervention based these genetic variation will be effective in improving the health and behavior of those with ASD. This work has started in



Melbourne Australia and it is to be expanded to include DNA collected in this country. We recently presented some of the preliminary data at the recent Autism conference entitled: Nutrition, Genetics and Autism: Early steps towards a personalized approach?

Publication of the 1st issue of the NUGSE Research in Education Journal

***NUGSE Research in Education* is pleased to announce its first issue, which was completed this summer. This student-led, open-access research journal was founded in 2015 by the students and faculty of the Graduate School of Education.**

As they describe themselves, *NUGSE Research in Education* is a peer-reviewed journal designed for educational leaders, policymakers, researchers and students interested in empirical research, critical reviews, and analytical papers on a wide range of topics in education. The primary aim is to share experience and promote understanding of Kazakhstan's unique educational context. The journal is peer-reviewed by an editorial board comprising students and faculty of the Nazarbayev University Graduate School of Education, offering NU students and alumni the



experience and knowledge of the publication process, peer-revision boards,

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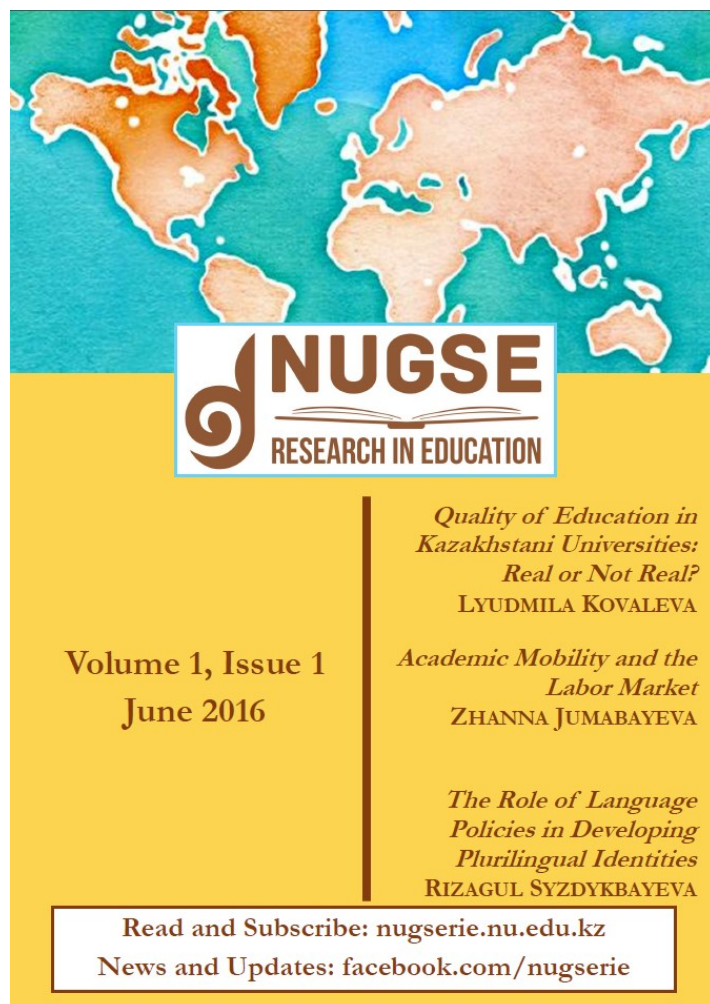
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and critical analysis of quality scholarly work.

In the process of its first issue, the journal received 19 article submissions from current MSc, MA, and PhD students, as well as GSE alumni. Those submissions were distributed anonymously to 43 peer reviewers, who assessed each article on a standard-based rubric, and offered comments for the author to improve the text.

In the end, three articles completed the review and revision stage, and were published alongside five editorials. The topics addressed in the peer-reviewed section include the effects of national multilingual policies on society, the role of an international diploma on employment opportunities, and the challenges associated with assessing the quality of an education system. The editorials not only introduce the reader to the journal's aim and history, but also give advice on publication and present student perspectives on inclusive practices and technology-enhanced learning at NU.

The individual articles are available on the NU Repository (nur.nu.edu.kz) and the complete first issue is available on the



NUGSE
RESEARCH IN EDUCATION

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*Quality of Education in
Kazakhstani Universities:
Real or Not Real?*
LYUDMILA KOVALEVA

*Academic Mobility and the
Labor Market*
ZHANNA JUMABAYEVA

*The Role of Language
Policies in Developing
Plurilingual Identities*
RIZAGUL SYZDYKBAYEVA

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third floor of the library and online at the journal's webpage (nugserie.nu.edu.kz). The journal's editorial team is currently preparing the second issue, expected in December.

My Projects: Research news from NU faculty member *Dr. Daniele Tosi*,

Assistant Professor, School of Engineering, EEE Department; Head of Biosensors and Bioinstrumentation Laboratory, NLA

Since I joined in 2014, we worked on research based on thermal ablation, which is an interventional minimally invasive procedure increasingly applied to cancer care, to treat tumors after they have been diagnosed and localized. This procedure makes use of radiofrequency, microwaves, laser, or ultrasound, to heat cells in a tumor tissue, bringing them to death.

Our research focuses on the measurement part: thermal ablation is extremely hard to control and estimate, particularly in real time, so its success can significantly expand if we are able to measure, at the point of treatment, the biophysical phenomena occurring. Much like when we drive a car we rely on visual and sensors aid, we would like to receive the same support when "driving" thermal ablation, but the challenges are huge in terms of size, biocompatibility, resolution, and detection time.

In our work, we developed and introduced fiber optic sensors (FOS) for this task. FOS are miniature, biocompatible, and lightweight sensors that can detect temperature, pressure, and other biophysical parameters in an extremely localized spot. This year, we reported the first-ever measurement of intra-tissue pressure during laser ablation with a fiber optic pressure

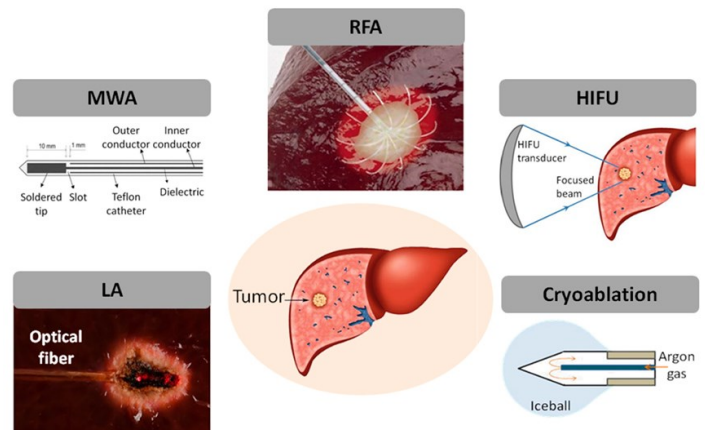


Fig. 1. Minimally invasive thermal treatments for tumor removal: laser ablation (LA); microwave ablation (MWA); radiofrequency ablation (RFA); high intensity focused ultrasound (HIFU); and cryoablation.

sensor [1], and an investigation of the strain effects due to breathing on temperature readout during laser ablation [2], whereas in 2015 we published an invited paper [3] showing all technologies for radiofrequency ablation monitoring. Furthermore, we recently published the first review paper for FOS technologies for thermal monitoring in all thermal ablation procedures [4]. Our research partners with Bio-Medical Campus of Rome (Italy), Politecnico di Torino (Italy), and University of Limerick (Ireland) among others.

Recently, I was awarded as PI a grant (ORAU, 300k USD for 3 years - with guaranteed 125k USD for 15 months) which will explore even further the

(Continued on page 21)

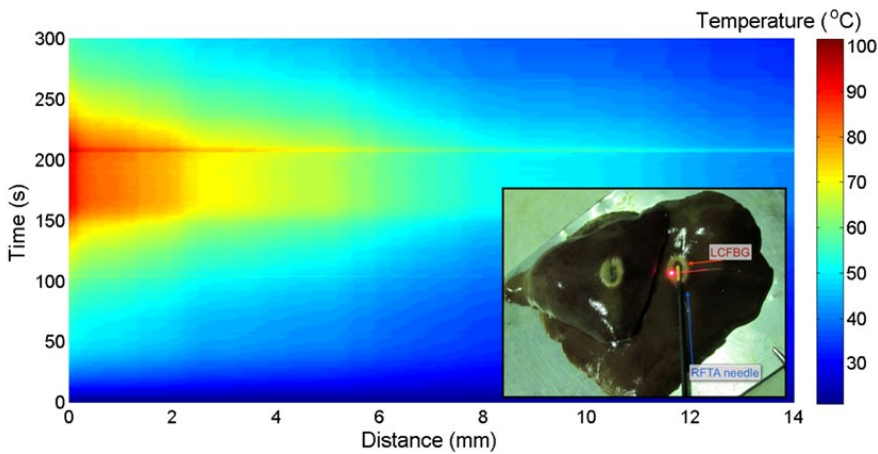


Fig. 2. Thermal map (temperature as a function of distance and time), obtained for the first time with a linearly chirped fiber Bragg grating (LCFBG) sensor, on RF ablation. The inset shows position of sensor and RF applicator, and the effect of ablation on a porcine liver phantom.

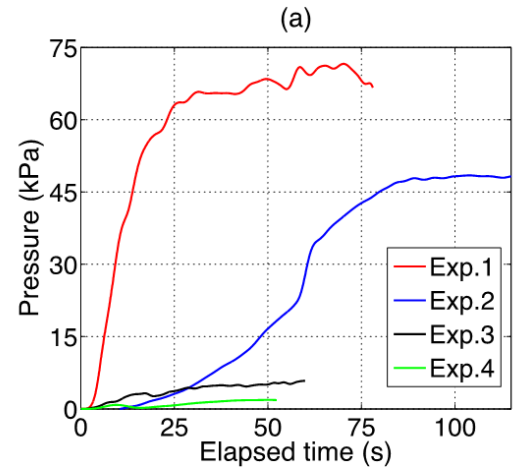


Fig. 3. Intra-parenchymal pressure recorded with a fiber-optic pressure sensor, in 4 different laser ablation experiments as reported in [1].

(Continued from page 20)

measurement part: we will develop and catheterize more fiber optic sensor technologies, and finally explore the possibility of dynamically control the procedure, improving its performances. On the back of this success, I was also awarded as PI a commercialization grant (NURIS) related to a fiber-optic sensor capable of detecting temperature in thermal ablation, with a spatial resolution of less than 1 millimeter; our preliminary work carried out also by Sanzhar Korganbayev (Master Student, EEE) will be presented in November at IEEE Sensors Conference in Orlando, US [5].

[1] **D. Tosi**, P. Saccomandi, E. Schena, D. B. Duraibabu, S. Poeggel, G. Leen, E. Lewis, "Intra-tissue pressure measurement in ex vivo liver undergoing laser ablation with fiber-optic Fabry-Perot probe," *Sensors*, vol. 16, no. 4, 544, 2016.

[2] C. Cavaiola, P. Saccomandi, C. Massaroni, **D. Tosi**, F. Giurazza, G. Frauenfelder, B. Beomonte Zobel, F.M. Di Matteo, M. A. Caponero, A. Polimadei, E. Schena, "Error caused by respiratory movements on a probe for distributed

temperature monitoring during cancer ablation: ex vivo and in vivo analysis," *IEEE Sensors Journal*, vol. 16, no. 15, pp. 5934-5941, 2016.

[3] **D. Tosi**, E. G. Macchi, A. Cigada, "Fiber-Optic Temperature and Pressure Sensors Applied to Radiofrequency Thermal Ablation in Liver Phantom: Methodology and Experimental Measurements," *Journal of Sensors*, vol. 2015, 909012, 2015. (Invited paper).

[4] E. Schena, **D. Tosi**, P. Saccomandi, E. Lewis, T. Kim, "Fiber optic sensors for temperature monitoring during thermal treatments: an overview," *Sensors*, vol. 16, no. 7, 1144, 2016.

[5] **S. Korganbayev**, **N. Zhakin**, **D. Tosi**, F. Napoleoni, E. Schena, P. Saccomandi, R. Gassino, A. Vallan, G. Perrone, M. Caponero, "Linearly Chirped Fiber-Optic Bragg Grating as Distributed Temperature Sensor for Laser Ablation," *IEEE Sensors Conference, Orlando, US*, 30 Oct – 2 Nov 2016.

Phenomenology of Strong Gravity

WORKSHOP AT PHYSICS DEPT., SCHOOL OF SCIENCE & TECHNOLOGY



The workshop "Phenomenology of Strong Gravity" was held on September 14-16 at Nazarbayev University. The workshop was devoted to various aspects of gravity and it aimed at bringing researchers working in relativistic astrophysics, general relativity, and quantum gravity to Kazakhstan to foster collaboration and interaction between scientists in the region with renowned scientists around

the world. **The workshop was organized by the Physics Department of Nazarbayev University with the support of the Julian Schwinger Foundation.** Students and young researchers from Kazakhstan and neighboring countries with interests in astrophysics and theoretical physics were especially welcome to attend.

More information can be found [here](#).

Workshop on the Disaster Management and Emergency Responses to Flooding

The workshop focused on three specific themes related to forecasting, decision making and response to natural disasters:

- 1. Natural hazards from floods and seismic activity to landslides;**
- 2. Remote Sensing (Satellite) for monitoring and prediction of natural disasters; and,**
- 3. Disaster Risk Reduction and Resilience (DRRR).**

Theme I dealt with natural hazards with a particular focus on flooding from seasonal glacial ice melt and seismic distortions resulting in landslides, with field work tracking and sensors applications, data collection and modelling.

Theme II dealt with remote sensing for real-time monitoring and prediction analysis, applications of the different international satellite data, including EU

(Continued on page 23)



Almaty University of
Power
Engineering &
Telecommunications



RESEARCHER
LINKS

ОЙДАН ІСКЕ АСЫРУҒА ДЕЙІН!
ОТ ИДЕИ ДО ВОПЛОЩЕНИЯ!



АҚУОНДЕРЛІК ҚОҒАМ
ҒЫЛЫМ ҚОРЫ
ФОНД НАУКИ
АҚУОНДЕРЛІК ҚОҒАМ



(Continued from page 22)

and Kazakhstan KazEOSat-1 and -2. Satellite data processing, data collection, modelling and visualization with web GIS tools application were also welcome.

Theme III dealt with Disaster Risk Reduction and Resilience (DRRR) and response. Public emergency preparedness researchers, emergency agency cooperation with scientists, multidisciplinary social-political science and engineering science cooperation experts related to DRRR were welcome.

The five-day workshop included intensive discussion forums where free thinking was encouraged to delve into the problems and challenges to uncover innovative solutions, the workshop programme had been broken down into the following activities:

1. Introduction & networking day;
2. Knowledge Transfer day;
3. Field visit day;
4. Sandpit day; and,
5. Future collaboration day.

Publication

The workshop papers are to be published in the AUPET's scientific journal "VESTNIK" for the promotion of disaster resilience research cooperation.

Following are the current DRINU projects:

1. **"Ulytau-Aral" expedition.** Its main goal is water sampling of the Aral Sea for further hydro-biological research. Besides the northern Aral, which is now recovering, the DRINU will also explore the part of the reservoir, which is now experiencing a strong environmental catastrophe.
2. **Burabay project.** The aim of the project is to understand the role of climatic and anthropic factors on the hydrological cycle of lakes in Burabay Park.

More information can be found [here](#).

3rd Dynamics Days Conference in Central Asia

WORKSHOP ORGANIZED BY NLA & SST, NAZARBAYEV UNIVERSITY

Third Dynamics Days conference in Central Asia aimed at bringing together experts in complex systems: classical, semi-classical and quantum and at identifying future trends of research especially in the emerging field of quantum technologies.

The conference series started in 2013 in Samarkand, Uzbekistan. The main goal of this series is to bring together experienced researchers, young scholars and students from Central Asia and their colleagues from Europe, Asian countries and U.S.

Main Topics:

- Quantum Thermodynamics, Ensembles and Transport Dynamics of Coupled Nonlinear Systems and Networks
- Fractality, Transient and Critical Phenomena. Superconductivity
- Metamaterials and Optical Arrays
- Quantum Lattices, and Vertices
- Dynamics of Spin and Spin-Equivalent Quantum Fields.



The local organizers gratefully acknowledge the Ministry of Education and Science of the Republic of Kazakhstan for the financial support of this event via the MES grant 339/76-2015.

More information can be found [here](#).

Environmental Science & Technology Group's Research Updates

Environmental Science & Technology is an interdisciplinary and broad area and offers the opportunity to bring together researchers from various backgrounds and provide a high-level approach with an international vision, in-depth knowledge and research. The Environmental Science & Technology Group (ESTg) was founded in 2013 as a basis for the development of research, teaching and provision of other services in the area of the Environment. Research

projects will lead some cutting-edge interdisciplinary research projects including targeted thematic areas as Soil, Water, Air and Waste in collaboration with prominent foreign Universities.

1. In the Summer 2016, the ESTg got several papers accepted at the prestigious Engineering Conferences:

- Two papers were accepted at the 2016 AIChE Annual Meeting, November 13-18,

(Continued on page 25)



Participants in the Conference on Sewage and Wastewater Treatment

(Continued from page 24)

2016, San Francisco, US:

- V.J.Inglezakis and M.M. Fyrillas, *Fixed bed modeling revisited; Generalized solutions for S-shaped isotherms*
- V. Inglezakis, D. Tarassov, A. Jetybayeva, Yernar Myngtay and Dinara Zhalmuratova, Dastan Nurmukhambetov, Anuar Andasbayev, A. Kudaraova, *Response of activated sludge to the presence of phenol in batch and continuous flow systems.*

The AIChE Annual Meeting is the premier educational forum for chemical engineers interested in innovation and professional growth. Academic and industry experts will cover wide range of topics relevant to cutting-edge research, new technologies, and emerging growth areas in chemical engineering. More on the Conference [here](#).

- A paper accepted at the 2nd International Conference of Low Carbon Asia 2016 (ICLCA):

- V. J. Inglezakis, K. Moustakas, Gulzhan Khamitova, RamilyamRakhmatulina, BotaSerik, YerkezhanAbikak, Stavros G. Pouloupoulos, *Municipal Solid Waste Management in Kazakhstan: Astana and Almaty case studies.*

2. ESTg participated in the conference on Sewage and Wastewater Treatment organized by the Municipality of Astana. Dr Inglezakis received a special invitation and chaired the conference representing Nazarbayev University and our research group.

3. ESTg published a new paper in Environmental Management Journal, on the best Journals in our area with a **5-years impact factor of 4,049:**

(Continued on page 26)



Wastewater and Water Treatment Workshop participants

(Continued from page 25)

- V.J. Inglezakis, S. Malamis, A. Omirkhan, J. Nauruzbayeva, Z. Makhtayeva, T. Seidakhmetov, A. Kudarova, *Investigating the inhibitory effect of cyanide, phenol and 4-nitrophenol in the activated sludge process employed for the treatment of petroleum wastewater*. More on the Environmental Management Journal can be found [here](#).
4. **ESTg got a new European Union HORIZON 2020 project entitled "NanoMed"**. The project is entitled "*Nanoporous and Nanostructured Materials for Medical Applications*" (NanoMed) is lead by

Universidad de Alicante (Spain, Project Leader) and ESTg is participating as Task Leader on the synthesis and characterization of porous materials. The project duration is 4 years (2017-2021) with the participation of 12 partners in total. More on HORIZON 2020 programme can be found [here](#).

5. ESTg organized a workshop on Wastewater and Water Treatment in collaboration with the Institute of Environmental Engineering at the Federal Institute of Technology (ETH Zurich) and the support of the Swiss Embassy. A group of 30 MSc students, the Swiss Ambassador U.Schmid, the Dean, students and colleagues of SEng participated the event.

GRANTS & COMPETITIONS

New Funding Opportunities



Image Source: [Dixie State University](#)

We have identified new funding opportunities, all of which are suitable for the researchers based in Kazakhstan.

For your convenience, we also added funding opportunities listed in the previous issues of the Research Newsletter. The information on them can be found in the same Excel document.

For more information, please [click here](#).

EU's ERASMUS+ funding opportunities

Nazarbayev University organized a seminar on the ERASMUS+ funding opportunities for faculty and students on October 27.



For your convenience, we would like to share the presentations on the Erasmus+ mobility programs and other funding schemes with you in today's issue of the Research Newsletter.

In case you are interested in the Erasmus+ student mobility programs, please follow [this link](#).

If you want to see the information for faculty presented by the national coordinator of the Erasmus+ Programme, please [click here](#).

Additional information on other funding schemes provided by the Erasmus+ Programme can be found on this website.

ENG-GLOBALLY-07-2017: The European Union and Central Asia

Coordination and Support Action

Deadline: 2 February 2017

Scope: Taking into account the need for a more intensive and properly coordinated research in the field of Central Asian Studies and the need for closer links to EU policy making, a network of European researchers will be created which, in cooperation with researchers from Central Asian countries, will:

- through mapping the current state of affairs in the field of Central Asian Studies in Europe and European Studies in Central Asia, recommend relevant new forms and priorities for future EU scientific cooperation in social sciences and the humanities with the region;
- through mapping the current state of political, economic, trade, cultural and any other relations between the EU and its Member States with Central Asian countries as well as between Central Asian countries and countries in the rest of Asia, and analysing results of the existing measures and tools supporting them, recommend future priorities for European policy making. These recommendations should be prepared in close cooperation with any other relevant European and Central Asian stakeholders (e.g. local, regional and state authorities, not-for-profit sectors, representatives of businesses, etc.);



- prepare an awareness-raising dissemination and communication strategy for the promotion of Central Asia and its role for Europe, which could be used by a variety of stakeholders (e.g. education, media, EU public sphere in general).
- Any consortium submitting a proposal to this call should ensure a balanced representation of partners from countries in Central Asia.
- The Commission considers that proposals requesting a contribution from the EU in the order of EUR 1.5 million would allow this specific challenge to be addressed appropriately. This does not preclude submission and selection of proposals requesting other amounts.

Cross-cutting Priorities:

- International cooperation
- Socio-economic science and humanities

For more information, please [click here](#).

Multi-user Equipment Grants

Preliminary application deadline
13 January 2017

Career stage:

Intermediate, Senior

Where your host organisation is based:

UK, Low- and middle-income countries

Type of researcher:

Basic, Clinical, Public health

Level of funding:

£75,000 to £1 million

Duration of funding:

Up to 5 years

Who can apply

You can apply for a grant if you, and any coapplicants, have:

- An academic or research post (or the equivalent).
- A track record in getting grant funding.
- A salary already in place for the duration of the award period. Any coapplicants who don't have salary support for the duration of the grant are eligible to apply if they have at least one year's personal salary support at the proposed start date of the grant.

If you've already been unsuccessful with a full application for this scheme, please contact us before you apply again.

What we're looking for

When we look at your application, we'll assess:

- how the proposed equipment will directly benefit your research and that of



others

- your track record
 - your host organisation's financial contribution
 - evidence of demand for the equipment
 - whether you've considered that similar equipment may be available locally/nationally
 - pilot data showing the suitability of the equipment
 - management and sustainability plans
 - expertise in operating the equipment
 - the cost of the equipment (including manufacturer discounts)
- added value for Wellcome Trust-funded research.

What's expected of your host organisation
Your host organisation must provide a supporting statement that outlines:

- how the equipment will contribute to their overall research strategy
- their contribution towards the equipment (financial or otherwise).**

Host organisation's contribution

Your host organisation should contribute at least ten per cent towards the cost of the equipment. If you ask for more than £500,000, the host organisation should contribute at least 20 per cent. Contributions can include support in-kind as well as money, such as the provision of a key support post.

To view the full announcement, please click [here](#).

"Original – isn't it?" New Options for the Humanities and Cultural Studies

Deadline: November 17, 2016

- area of research: humanities and cultural studies, theoretical social sciences
- type of funding: research projects; funding of a teaching substitute
- up to 80.000 or 150.000 Euro (depending on funding line)
- 12 or 18 months (depending on funding line)
- post-doctoral researchers/project teams in Germany; possible to include international cooperation partners
- short application; anonymized selection procedure
- additional benefits: funding for communication of science and research

Objectives

"Originality" is a crucial criterion of quality in the humanities and cultural studies. The specific nature of the themes belonging to the humanities and cultural sciences, though, makes it extremely difficult to say precisely what constitutes "original", "new", or "innovative". It may encompass anything that contradicts the established knowledge or generally accepted intuition; or just as well the



development of a new approach to research, a new hypothesis, a new theory, observation of a new phenomenon, and discovery of knowledge gaps.

With this new funding offer the Foundation wishes to encourage scholars in the humanities and cultural studies to embark on projects of groundbreaking originality. Funding will be made available for initial exploration of the research idea.

With this funding initiative the Foundation is also treading new paths concerning the application and selection procedure – in at least three different ways: In order to expedite processing and enable decisions in between 4 to 5 months, the selection procedure has been trimmed and made as straightforward as possible. There is also an innovative review process, combining pre-selection on the part of the Volkswagen Foundation, and final selection by a panel of experts. Anonymized review ensures that the originality of the idea remains the sole selection criterion.

Scope of Funding

The funding initiative comprises two funding lines:

(Continued on page 31)

Funding Line 1 "Komm! ins Offene..." (Hölderlin)

The funding line addresses individual researchers, offering them the opportunity to initially explore their idea and subsequently describe it in an essay (up to EUR 80,000 EUR for a maximum of 1 year).

Funding Line 2 "Constellations"

The funding line addresses project teams comprising up to 4 applicants who wish to work together on a new research idea and test its feasibility in an initial exploratory phase, and subsequently co-

author a publication on the results (up to EUR 150,000 for a maximum of 1½ years).

Further details on the conditions and the application procedure can be found under **Information for Applicants (pdf)**. Applications must be filed electronically via the electronic application system.

Background

The funding initiative **"Original – isn't it?" New Options for the Humanities and Cultural Sciences** was established in 2014. During the first call the initiative was well received. It resulted in 387 applications. 17 projects were funded.

International Research in Computational Social Sciences



Area of research: computational social sciences

- type of funding: own position (postdoc-teams); events/meetings (research/science)
- up to 800.000 EUR per postdoc-project
- 2-4 years
- postdoc-teams (2-4 members, no more than 3 years after completion of PhD); for events/meetings: established researchers are also eligible to apply
- prerequisites: research questions in the area of "computational social

sciences"; main applicant based at research institution in Germany; postdoc-teams: international and interdisciplinary; must include at least one social scientist

- additional benefits: training programs; funding for communication of science and research

Objective

In recent years, what has come to be termed the "digitalization" of society has

(Continued on page 32)

led to fundamental social, political, and economic changes. The "digital revolution" has also had significant effects on social research, as the development and usage of new media devices and technologies has generated an abundance of data about human behavior which can be used for further research. On the one hand, this opens up new opportunities for social science research; on the other hand, it also involves methodological and methodical challenges. These new developments offer an extensive breadth of potential research questions within the thematic field of the "Computational Social Sciences", the exploration of which the Foundation would like to support.

The Foundation not only intends to support the further advancement of this field, but also explicitly aims at supporting the development of international networks between scholars based in Germany and abroad as well as the further training of junior researchers – from the level of Master's to postdoc.

Scope of Funding

The focus of this call is on the exploration of socially relevant research questions. The Foundation supports both international workshops and summer schools (also as series of up to three summer schools) as well as international research cooperations of up to four postdoctoral researchers; any proposal submitted must address socially important topics, which can be explored using (new) tools and methods offered by the

"Computational Social Sciences". Project teams can be interdisciplinary, but a social scientist must always be involved.

Details of conditions and the application procedure can be found under "**Information for Applicants 107**" (pdf). Applications must be written in English and filed electronically via the application portal.

Background

This call is set in the context of a range of activities established by the Foundation with regards to the thematic field "Big Data/Digitalisation of the society". Following the Herrenhausen Conferences on "Digital Humanities" (2013) and "Big Data in a Transdisciplinary Perspective" (2015), the Foundation decided to support this dynamic and still rapidly developing field of "Computational Social Sciences".

USEFUL INFORMATION

Nazarbayev University's New Publications

Google Alerts is one of Google's tools to keep track of trends, interesting topics, or anything really new that appears on the web. We would like to introduce you the recent alerts (*since June 1, 2016 – November 1, 2016*) on the published papers by our colleagues so you can keep track on NU research successes

For more information, please [click here](#).



Promoting interdisciplinary research: PURE research management solution

Nazarbayev University has purchased the Pure research management solution to promote interdisciplinary research, facilitate and ease any research-related procedures: starting from providing information on any research works (articles, books, book chapters, working papers, conference proceedings, etc) to internal grant and project management.

To help us ease the research management procedures for you, please fill out all research-related data in your profiles.

On **October 21**, the NU faculty and researchers should have received their details to log in to the Pure system from the **"purehosted"** sender. If you have

problems logging in to the system, please email **Aiman Temirova** at aiman.temirova@nu.edu.kz.

Aiman Temirova has already visited most of the Departments at Schools, and plans to provide 30-60 minute trainings at every research unit in Schools and Research Centers of Nazarbayev University by the beginning of December.

The step-by-step guideline on how to enter data and update your profiles can be downloaded by following [this link](#).

We appreciate your cooperation!

Kind Regards,
Research Services Office

Research Performance Evaluation using SciVal

In this month's issue, we are delighted to share an updated presentation on the research performance of Nazarbayev University using the SciVal research solution.

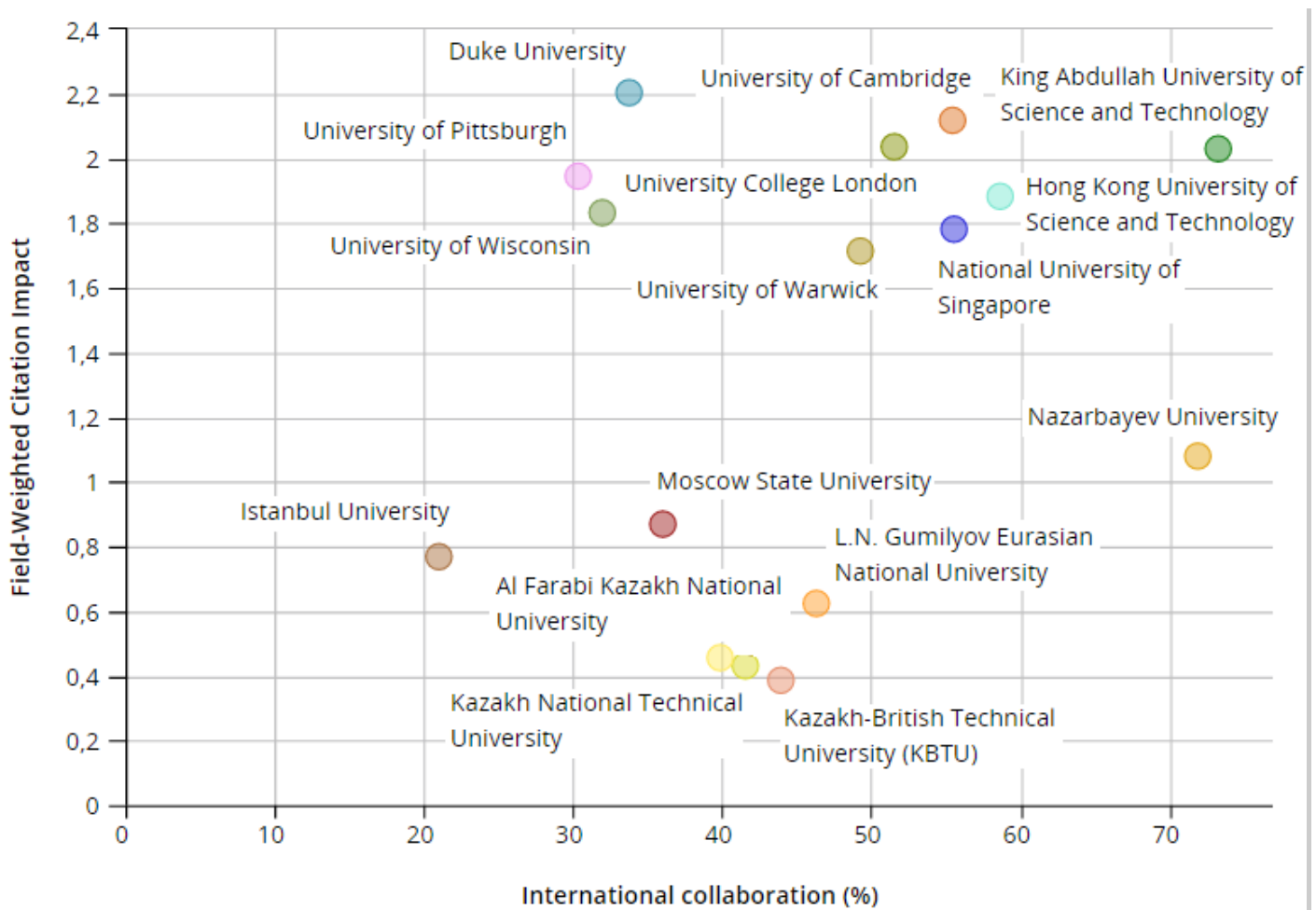
Since its inception in 2011, Nazarbayev University faculty and researchers have released **848** peer-reviewed publications indexed by Scopus, and have been cited **2,013** times (source: Scopus, October 20, 2016). The approximate number of citations per the peer-reviewed publication is 2.4.

In order to provide you with more

comprehensive information on the NU's research performance, we prepared a [presentation using SciVal research evaluation](#) platform that is based on Scopus.

We are also pleased to provide you with an analysis of the NU research output prepared using SciVal by **Dr. Alex James**, School of Engineering, on his website <http://biomicrosystems.info/alex/block2/>

If you have any questions regarding the provided information, please contact **Aiman Temirova** (email address: aiman.temirova@nu.edu.kz), Manager for Research Monitoring and Assessment, Research Services Office.



Benchmarking the research performance of Nazarbayev University, national and international institutions using Field-Weighted Citation Index and International Collaboration share of peer-reviewed publications from 2011 to 20 October, 2016.

Journal Metrics in Scopus & Web of Science

In this month's issue, we would like to provide you with a comparison of the Journal Metrics used in Scopus and the Web of Science.

Database	Web of Science	Scopus/WoS	Scopus	Scopus
Journal Metrics	Impact Factor (IF)	h-index	SCImago Journal Rank, SJR, SJR2	Source Normalised Impact per Paper (SNIP)
What they measure	The average number of citations to recent articles published in the journal.	Productivity and impact of a journal.	The scientific prestige of journals.	The ratio of a journal's citation count per paper and the citation potential in its subject field.
Their measurement output	IF: a measure specific to a particular time period	h: a measure highly dependent on the 'academic age' of a researcher as h grows as citations accumulate	SJR/SJR2: a size-independent measure of prestige	SNIP/SNIP2: a measure where context is given importance in citations
Useful for	It aims to allow direct comparison of sources in a specific subject field.	It aims to allow direct comparison of sources in different subject fields.		
Unique points	The most widely used bibliometric indicator	Can be applied to the productivity and impact of a group of scientists, such as a department or university or country, as well as a scholarly journal.	<ul style="list-style-type: none"> Is weighted by the prestige of the journal, thereby "leveling the playing field" among journals Eliminates manipulation: the SJR ranking is raised by being published in more reputable journals; A journal's prestige is "divided" equally among the total number of citations in that journal; Normalizes for differences in citation behaviour between subject fields 	<ul style="list-style-type: none"> Measures contextual citation impact by "normalizing" citation values; Takes a research field's citation frequency into account Considers immediacy – how quickly a paper is likely to have an impact in a given field Accounts for how well the field is covered by the underlying database; Calculates without use of a journal's subject classification to avoid delimitation Counters any potential for editorial manipulation.
Draw-backs	Affected by editorial policies	<ul style="list-style-type: none"> Does not account for the typical number of citations in different fields. Different fields, or journals, traditionally use different numbers of citations. Can be manipulated through self-citations 	<ul style="list-style-type: none"> Emphasizes those sources that are used by prestigious titles. Compared to Impact Factor, SJR tends to make the differences between journals larger. Journals in life and health sciences tend to have higher values. (Colledge et al., 2010) 	<ul style="list-style-type: none"> Compared to Impact Factor, SJR tends to make the differences between journals smaller. Journals in engineering, computer science and social science tend to have higher values. (Colledge et al., 2010)

Source: Colledge, L., de Moya-Anegón, F., Guerrero-Bote, V., López-Illescas, C., El Aisati, M. h., & Moed, H. (2010). SJR and SNIP: two new journal metrics in Elsevier's Scopus. *Serials: The Journal for the Serials Community*, 23(3), 215-221.

CONGRATULATIONS!

NU researchers won all prizes at the Inaugural Canada Conference in Kazakhstan "Applying Canadian Models to Kazakhstan"

Congratulations to the NU researchers on winning all prizes at the Inaugural Canada Conference in Kazakhstan!

The Embassy of Canada to the Republic of Kazakhstan, in partnership with the Library of the First President of Kazakhstan, organised the Inaugural Conference "Applying Canadian Models to Kazakhstan" on the 1st of September, 2016 in Astana city. The GSPP team, Dr. Saltanat Janenova jointly with a research assistant Ilyas Yesdauletov, were awarded a grand prize for their paper "*Innovative Public Service Reforms: What Kazakhstan Can Learn from Canada?*". GSPP Professor Peter Howie was awarded the second prize for his paper "*What Kazakhstan Can learn from Alberta's Diversification Policies: Issues, Best Practices and Recommendations*". Carlene Groen from NU Library was awarded the third prize for her paper "*Libraries Strengthen Diversity: Differences Between Canadian and Kazakh Laws*". Aaron Joshua Pinto from the Academy of the Organization for Security and Co-operation in Europe was also awarded the third prize for his paper on "*Harnessing Canadian Water Management Expertise to Enhance Water Security in Kazakhstan*". The conference organisers expressed honorary mention to NU Professor Zhanay Sagintayev for his paper titled "*Towards the Development of Multidisciplinary Collaboration as the Cornerstone of Kazakhstan Innovations through Canadian*



Models" and Dr. Sagintayev's paper with his students, titled "*Improving Air Quality in Almaty Using Best Practices from Calgary*".

The conference was attended by the representatives of the government bodies, Embassies, international organisations and expert community. All papers have analysed implementation of different policies (such as public service modernisation, diversification, innovations, and access to open information) in two countries: Canada and Kazakhstan from a comparative perspective. Both countries have large geographical territories and low population densities which require their governments to put an extra effort to ensure equal access and better quality service delivery across various regions of these countries. It is important to analyze how various reforms have been shaped and implemented in Canada and Kazakhstan,

(Continued on page 37)



(Continued from page 36)

particularly in the context of current political agenda in Kazakhstan to meet standards of the Organisation for Economic Cooperation and Development. Although the progress in implementation of different policies might vary in these

countries, identification of similarities and differences with respect to the challenges and obstacles faced during policy implementation might prove beneficial for practitioners and academic community from Kazakhstan and other transitional countries.

Prof. Vladimir Brusic, Professor, NUSOM, wins Erasmus+ grant

Congratulations to Prof. Brusic on winning the Erasmus+ mobility grant in partnership with the Agricultural University of Athens!

For over 25 years, Europe has funded the Erasmus programme, which has enabled over 3 million European students to spend part of their studies in another higher education institution (HEI) elsewhere in Europe. Erasmus+ now opens up these opportunities to students and staff from other parts of the world. Under international credit mobility, a HEI in a Partner Country can send its students, doctoral candidates or staff to a partner HEI in a Programme Country, and vice versa. Students or doctoral



candidates are able to study abroad for a limited period of 3 to 12 months for which credits are obtained. After the mobility phase, the students return to their sending institution to complete their studies. Similarly, staff can spend a teaching and/or training period abroad for up to 2 months.

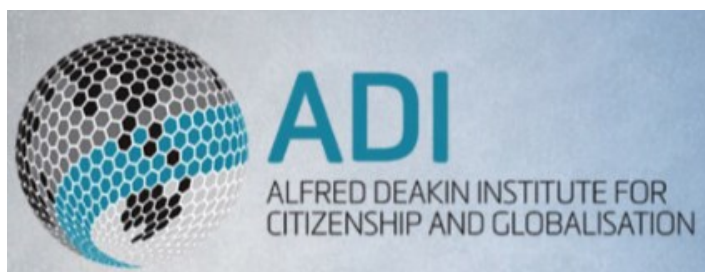
For more information on the Erasmus+ mobility grant scheme, please click [here](#).

Dr. Riccardo Pelizzo, Acting Vice-Dean for Academic Affairs, GSPP, wins a visiting research fellowship with the Alfred Deakin Institute for Citizenship and Globalization

We would like to congratulate Dr. Pelizzo on winning a short-term visiting research fellowship.

The Alfred Deakin Institute for Citizenship and Globalization (ADI) is an internationally recognized and highly regarded social sciences and humanities research institute.

The ADI researchers aim to understand the complex meanings of citizenship, social inclusion and globalization, and investigate the implications of these forces



in our lives and communities.

The ADI seeks to contribute to knowledge construction and influence research developments, public debates and policy

Konstantinos Valagiannopoulos publishes his paper in the prestigious journal *Physics Review X*

Physical Review X is one of the flagship journals of the American Physical Society, highly selective, online-only, fully open access which has been launched in May 2011. It aims to publish, as timely as possible, a limited number of key papers from all areas of fundamental, applied, and interdisciplinary physics, that merit broad dissemination and high visibility. The mission of this journal is to disseminate innovative and impactful research advances to the broad science and engineering communities under its open access publishing model. Professor Konstantinos Valagiannopoulos from the NU Physics Department with collaborators from the University of Texas at Austin, put forward a paper entitled Parity-Time Symmetric Nonlocal Metasurfaces: All-Angle Negative Refraction and Volumetric Imaging in Physical Review X.

Konstantinos is an Assistant Professor in the Department of Physics of Nazarbayev University (NU), Kazakhstan. He obtained his Degree on Electrical and Computer Engineering (1999-2004) and pursued his PhD (2004-2009) in Electromagnetic Theory at the National Technical University of Athens (NTUA), Greece. He joined (2010-2015) Aalto University, Finland as a member of Theoretical and Applied Electromagnetics of Complex Media group, while he performed a long-term research visit (2014-2015) to University of Texas at Austin, USA collaborating with the Metamaterials and Plasmonics Laboratory. Currently, he maintains collaborations with the Department of Physics at Harvard University, University of Texas at Austin, Aalto University and the Aristotle

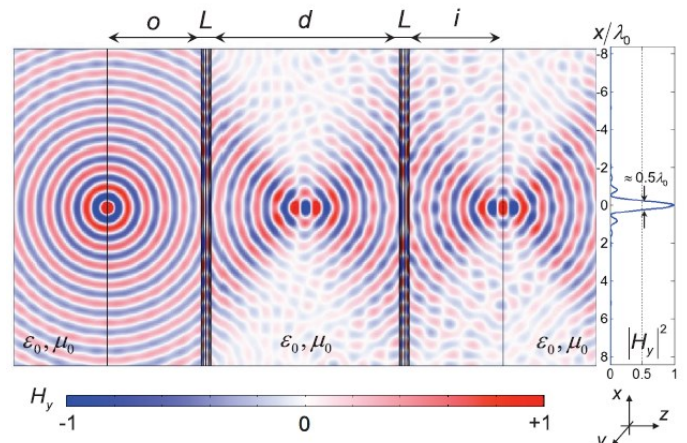


FIG 3. Magnetic-field distribution (time snapshot) of the proposed PT -symmetric lens at steady state, under TM -polarized pointsource illumination on the left side (animation in Ref. [36]). The lens is homogeneous along the transverse x direction. The inset on the right shows the field intensity on the focal plane (at distance i from the active element), demonstrating transverse resolution very close to the diffraction limit.

University of Thessaloniki.

His research portfolio spans two areas: (i) devices controlling electromagnetic fields including absorbers and energy transfer/harvesting, cloaks and invisibility and field/radiation enhancement and (ii) materials employed in these devices including hyperbolic metamaterials, graphene and other controllable 2D media, parity-time symmetric structures and realistic mimic of exotic electromagnetic properties by conventional materials. During his career he has received the following awards.

In April 2016, he was elevated to IEEE Senior Member, while in December of 2015 he received the Journal of Optics Research Excellence Award 2015. In May of 2008 he received the International Chorafas Award and the competitive Thomaidis Award for the Best Doctoral Thesis. He has won an Newton Al-Farabi Researcher Links Travel Grant for 2017.

***Dr. Peter Howie, Associate Professor, GSPP,
writes a book chapter in
"Economic Diversification Policies in Natural
Resource Rich Economies"***

We would like to congratulate Dr. Howie on publishing a book chapter!

The chapter "Kazakhstan's diversification strategy – Are policies building linkages and promoting competition?" critically evaluates the question "Is Kazakhstan on the "proper" path of sustainable development?" In spite of the potential difficulty of answering this question, the chapter attempts to review Kazakhstan's development strategies and plans with specific interest given to industry competitiveness and individual firm efficiency and their interconnectedness with economic diversification using Morris, Kaplinsky and Kaplan's (2012) "building linkages" conceptual framework. This analysis was performed in order to identify areas that require immediate attention as well as identify policies that have been effective. That is, the major objective of this chapter is to identify the strengths and weaknesses of Kazakhstan's



development plans with respect to their usefulness in promoting economic diversification.

ANNOUNCEMENTS

Call for Papers for the Fifth Annual Doctoral Research Workshop on Central Asia -

Central Asia's Evolving Relations with China: Economy, Society and Politics

Venue: Senate House, Russell Square, Street, London, WC1E 7HU

Date: Saturday, 28 January 2017

Central Asia's evolving relations with its economically powerful and increasingly politically assertive neighbour, China, carries enormous importance for the region's development prospects. There are numerous opportunities ahead as this relationship opens new avenues of possibilities and prospects for different actors. Historic dependence on Russia and the new expectations from the west are balanced against China's arrival. From exploitation of energy resources to trade and the development aid, Central Asian states are drifting towards the shadow of China at different speeds. There are, however, multiple domestic political and economic risks associated with being involved in a highly asymmetric relationship with a powerful neighbor at a time when there is limited regional cohesion or domestic political accountability. The purpose of this one-day event is to shed light on the multiple dimensions of this transformation through empirically and theoretically rich scholarly studies from diverse disciplines.

All paper proposals should ideally be part of PhD research or a postdoctoral study addressing a country or a region in Central Asia. Cross-country analyses from

the region will also be applicable.

Workshop Paper Themes:

- Economic and financial issues, trade relations and investment
- Development of infrastructure and aid from China
- Migration and labour markets
- Social and cultural aspects of China's influence in Central Asia
- Political elites and party politics
- Geo-politics and international relations

Submission details:

- A 500 word paper summary
- Bio: 100 words
- Author's name, institutional affiliation and e-mail

Deadline for Submission:

21 November 2016

All submissions should be sent to:

Dr. Alma Sharipova
alma.sharipova2@gmail.com

The full announcement can be seen by clicking [here](#).

ANNOUNCEMENTS

Passionate about science? FameLab needs you!



Are you aged between 21 and 35? Can you explain a scientific concept in English in just three minutes to a non-scientific audience?

If so, enter the FameLab competition and you could become the new face of Kazakhstani science, represent Kazakhstan at the FameLab International final in the UK, and open doors to a global career in science communication!

You can also win fantastic cash prizes from our partner, Chevron Kazakhstan.

The deadline for online applications is **19 December 2016**.

[Learn more and apply](#)

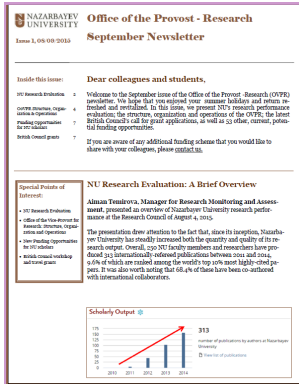
FYI, the NU community has been very successful in the FameLab Competition.

Last year, all 3 winners of the contest were NU researchers, who work at National Laboratory Astana. The winner of the competition, **Dana Akilbekova**, represented Kazakhstan in the International FameLab event in the UK.

This year, **Aiman Temirova**, NU Research Services Office, has been invited by the British Council to represent Kazakhstan at the Hall of FameLab event in the Natural History Museum in London, UK, which was livestreamed and watched across the world.

NEWSLETTER'S PREVIOUS ISSUES

Take a look back through the previous issues of our Newsletter!



Issue #1



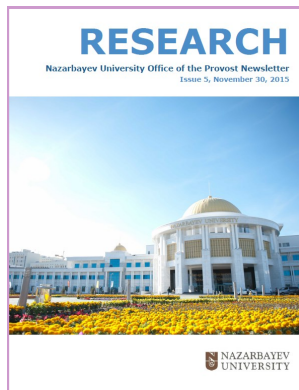
Issue #2



Issue #3



Issue #4



Issue #5



Issue #6



Issue #7



Issue #8



Issue #9



Issue #10



Issue #11



Research Services Office
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