

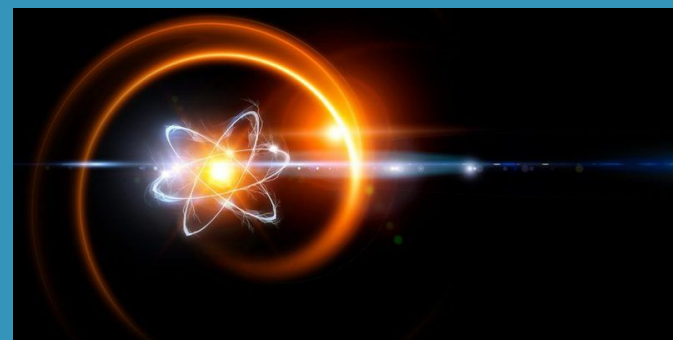


Goal 7 . Affordable and Clean Energy.
“Ensure access to affordable, reliable, sustainable
and modern energy for all.”

Karazin University joined the work of the Scientific Committee of the European Contest of Scientific Projects in the Field of Controlled Fusion



On 18-19 September 2023, professors of the Education and Research Institute of the School of Physics and Technology took part in the work of the Scientific Committee (Jury) of the European Call for Scientific Projects in the field of Controlled Fusion. In particular, the Head of the Department of Applied Physics and Plasma Physics, Academician Ihor Harkusha worked in the Materials Science section, while Professor of the same department, Corresponding Member Ihor Hirka worked in the Technologies and Systems section. The jury reviewed the results of their pre-evaluation of the funding requests and made recommendations for funding the best requests and improving the selection procedure in the future to the EUROfusion General Assembly. Out of fourteen requests, three projects were recommended for funding in each section.



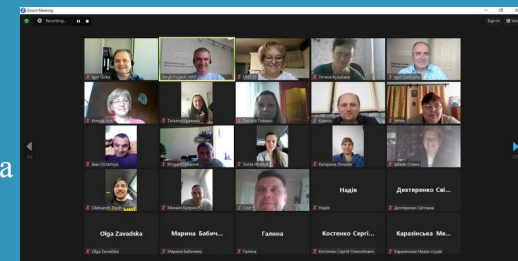
Support for Innovation in Controlled Nuclear Fusion. The development of renewable energy sources, particularly nuclear fusion, aims to create new, environmentally friendly energy sources. This will help reduce dependence on fossil fuels and decrease greenhouse gas emissions.

<https://karazin.ua/en/news/karazintsi-doluchylysia-do-roboty-naukovoho-komitetu-ievrope/>

European Day of Controlled Thermonuclear Fusion for Teachers from FuseNet Association

Teacher Education, Use of Innovative Materials, and STEAM Development. Integration of innovative content into school and extracurricular education.

On October 6th, the FuseNet association organized the 4th European Day of Controlled Thermonuclear Fusion for teachers in an online format. The Ukrainian part of the event was organized by professors from the Education Research Institute "School of Physics and Technology" and the graduates of the institute with technical support from the National Contact Point Euroatom in Ukraine and the media studio of Karazin University. Over fifty teachers from all corners of Ukraine participated in the event. The introductory remarks to the participants were delivered by a Professor of the Education Research Institute "School of Physics and Technology," Corresponding Member of the National Academy of Sciences of Ukraine, Igor Hirka, and the Euroatom NCP Coordinator in Ukraine, Sergiy Pugach. Yevgeniya Babenko, a graduate of the institute in 2011, who currently works in the field of plasma as a source of light at the Advanced Research Center of Nanolithography in Amsterdam, the Netherlands, spoke about plasma as a light source. Yelizaveta Velyzhanina, who, after completing her studies at the institute in 2019, works in the Laboratory of Dynamics of Systems at the Free University of Brussels, Belgium, introduced teachers to her research in computational hydrodynamics in the context of designing thermonuclear reactors. Dmytro Rafalskyi, a graduate of the Education Research Institute "School of Physics and Technology" in 2007 and the Technical Director and Co-Founder of the aerospace company ThrustMe in France, gave a presentation on "Current Challenges in Plasma Application in the Aerospace Industry." The Ukrainian part of the event was concluded by Academician of the National Academy of Sciences of Ukraine, Deputy Director-General for Scientific Work of the National Scientific Center "Institute of Plasma Physics" of the National Academy of Sciences of Ukraine, Head of the Institute of Applied Physics and Plasma Physics at the Education Research Institute "School of Physics and Technology," Igor Harkusha. He delivered a presentation on the activities of the Ukrainian Research Unit of the EUROfusion project. In the overall European part of the event, teachers were introduced to the educational materials available on the FuseNet website and also conducted an online tour of the JET and ITER tokamak facilities.



Ensuring universal access to affordable, reliable, sustainable, and modern energy. Promoting fusion energy, participating in projects such as ITER and EUROfusion.

<https://karazin.ua/en/news/evropeiskyi-den-kerovanoho-termoiadernoho-syntezu-dlia-nbsp/>

Karazin University, in partnership with Max Planck Institute for Microstructure Physics won a Grant Competition to Establish a Scientific Laboratory in Kharkiv



Karazin University, in partnership with the Max Planck Institute for Microstructure Physics of the Max Planck Society in Halle, Germany, secured victory in the competition held by the German Federal Ministry of Education and Research (BMBF) to obtain a grant for establishing a Core of Excellence " (CoE) in Kharkiv. This CoE will serve as a scientific laboratory adhering to the highest global standards, and the project has been named PLASMA-SPIN-ENERGY. Within the framework of CoE, advanced plasma technologies developed by experts from Karazin University will be implemented in state-of-the-art nanoscale spintronic devices, a development led by German partners. The preparation of this project took over two years, with graduates of Karazin University, Andrii Stervoyedov and Oleksiy Biletsky (Education and Research Institute "School of Physics and Technology"), along with Kyrilo Dronov (School of Computer Science), being the initiators of the project at the Max Planck Institute for Microstructure Physics. The project also involved active participation of the leading research fellow of the Education and Research Institute "School of Physics and Technology," Stanislav Dudin, Professor Igor Hirka of the Education and Research Institute "School of Physics and Technology," and Professor Oleksiy Chechkin from the University of Potsdam in Germany. This project received support from the Kharkiv Regional Military Administration, the Kharkiv City Council, the National Academy of Sciences of Ukraine, the National Science Center "Kharkiv Institute of Physics and Technology," Joint-Stock Company "FED," and the Technological University of Queensland in Australia. The selection of projects for funding was highly competitive, with the collaboration between Halle and Kharkiv being among the 12 teams chosen after rigorous screening at the first stage, granting them the right to prepare a detailed plan for the establishment of the CoE. On October 16, 2023, four winners were announced, including two centers to be established in Lviv, one in Kyiv, and one in Kharkiv, based at Karazin University.



Promoting the development of modern energy technologies. Plasma technologies as innovations for the energy sector.

<https://karazin.ua/en/news/karazinskyi-universytet-spilno-z-nbsp-partneramy-vyhrav-konk/>

An article titled 'Alternative Energy in Ukraine. System Dynamics Methodology in RES Research' was published (2024)



An article titled 'Alternative Energy in Ukraine. System Dynamics Methodology in RES Research' (2024) has been published, in which the authors from Karazin University investigate the use of renewable energy sources (RES) in the context of the country's strategy, economic barriers, and system dynamics methodology.

This research directly supports the United Nations Sustainable Development Goal 7, which aims to ensure access to affordable, reliable, sustainable, and modern energy for all. By addressing both the strategic and economic challenges in Ukraine's energy sector, the article contributes valuable insights toward accelerating the country's transition to clean energy and advancing global efforts to promote sustainable development.



Karazin University, with the Support of the Ministry of Digital Transformation and the Ministry of Health of Ukraine, Received 5 Energy Storage Systems from the American Charitable Organization Direct Relief and the Charitable Foundation of Yevhen Pivovarov



Improving Energy Resilience

The delivery of 5 energy storage systems ensures stable power supply to the university's critical and social infrastructure during power outages, aligning with Target 7.1: Ensure universal access to affordable, reliable, and modern energy services.



The value of mutual assistance and support is especially tangible in these extremely challenging times for the country and the city. Despite the difficulties, we are united, holding on, and working, thanks in part to the assistance of friends and partners of the university.

With the support of the Ministry of Digital Transformation of Ukraine and the Ministry of Health of Ukraine, from the American charitable organization Direct Relief, and with the support of the charitable foundation of Yevhen Pivovarov, through the Karazin University Foundation, Karazin University has received 5 energy storage systems. These systems provide power to critical and social infrastructure objects during power outages.

Anatoliy Babichev, Vice-Rector on behalf of the university administration, expressed gratitude for the assistance and noted that the donated energy storage systems will enable the Karazin community to stay, work, and develop during blackouts. We express sincere gratitude to the American charitable organization Direct Relief, the Ministry of Digital Transformation, the Ministry of Health of Ukraine and the charitable foundation of Yevhen Pivovarov for providing energy storage systems!

<https://karazin.ua/en/news/karazinskyi-universitytet-za-nbsp-spryiannia-mintsyfry-ta-nbsp/>

"Energy Security": Offline Lecture by Artem Chernyuk



Raising Awareness of Energy Security

An offline lecture on the topic of energy security helped inform students and the public about current challenges in the energy sector. This aligns with Target 7.A: Enhance international cooperation to facilitate access to clean energy research and technologies. The lecture focused on Ukraine's energy realities, including issues of energy shortages. This contributes to the training of professionals capable of responding to modern challenges, aligning with Target 7.1: Ensure universal access to reliable and modern energy services.

<https://karazin.ua/en/news/laquo-enerhetychna-bezpeka-raquo-oflain-lektsiia-vid-nbsp/>



We are starting to implement exciting new projects together with the Ukrainian Engineering and Pedagogics Academy. Within the framework of our cooperation, we cover the most relevant directions, exchange experiences, and acquire new knowledge!

On April 30, at Karazin University, the Head of the Department of Electrical Engineering and Power Engineering at the Ukrainian Engineering and Pedagogical Academy, Ph.D. Artem Chernyuk, held an offline lecture on energy security. The lecture took place in the university's safe space.

The speaker elaborated on the topic of energy and energy security for the residents of Kharkiv. During the lecture, participants discussed the concepts, components, methods, and means of energy security. And importantly, they explored the current energy realities of Ukraine and the world.

The issue of energy shortages and the ways to address this condition became particularly relevant for us. In particular, we discussed possible prospects for the development of the labor market in the energy sector.

We are sincerely glad that a new energy direction of education has been opened at Karazin University. We are confident that we will continue to work at no less active pace and in synergy to implement new initiatives!

<https://karazin.ua/en/news/laquo-enerhetychna-bezpeka-raquo-oflain-lektsiia-vid-nbsp/>