

**SPECIAL RESEARCH FUND 2018 - 2020**  
**CALL FOR POST DOCTORAL GRANTS**  
**IN THE FRAMEWORK OF**  
**SCIENCE AND TECHNOLOGY CENTER IN UKRAINE**  
**NUCLEAR FORENSICS TARGETED INITIATIVE**  
**SUPPORTED BY THE EUROPEAN UNION**  
**US DEPARTMENT OF ENERGY/NATIONAL NUCLEAR SECURITY ADMINISTRATION**

STCU is pleased to announce the call for its 2018 -2020 Post Doctoral Research Grant in Nuclear Forensics related Sciences. The research topic shall be related to developments and trends of radiochemical or nuclear physics sciences.

**Eligibility:** The Post Doctoral Research Grant is open to researchers (regardless of citizenship) in radiochemical or nuclear physics sciences holding a Ph.D. degree or a Master degree and 5 years of post University experience from a University located in one of the GUAM countries.

The STCU Special research fund is offering to a post doctoral researcher a two-year contract. The contract starts on April 2019 (subject to validation of the Ph.D's degree). If duly justified, the start date may be changed at the applicant's request, subject to the mentors' agreement. No contract may start later than September 1, 2019.

Two grants will be available, one for each of the host institutions. The selected post-doctoral researcher will be hosted by:

- The Institute for Nuclear Research (INR) of the National Academy of Sciences of Ukraine (NASU), and
- The National Science Center "Kharkov Institute of Physics and Technology (KIPT)" of NASU.

The proposed research topics:

**Based on INR:**

- **Determination of uranium mass in shielded objects of different configurations by the method of registration of neutron coincidences.**

*The candidate will carry out research using the equipment available at INR (described below) and will be provided with access to the necessary consumables and test samples as well as certified materials. The proposed methods of the research are neutron measurements using Active Well Neutron Coincidence Counter JCC-51; Neutron*

*Coincidence Analyzer JSR-14; Americium-Lithium neutron sources and mathematical modelling of neutron coincidences.*

– **Determination of age of unknown strontium sources by measuring  $^{90}\text{Sr}/^{90}\text{Zr}$  ratio.**

*The proposed methods of the research are Gamma-spectrometry  $^{90}\text{Y}$ ; radiochemical separation; mass-spectrometric determination of  $^{90}\text{Zr}$ . The candidate will carry out research using the equipment available at INR (such as high purity germanium detectors for gamma spectrometry and ICP-MS) and will be provided with access to the necessary consumables (inert gas, labware, reagents etc.) and certified materials.*

– **Determination of trace impurities in uranium ores and uranium concentrate of Ukrainian origin.**

*The candidate will carry out research using ICP-MS spectrometer Element 2. INR will provide the candidate with consumables (inert gas, etc.) and certified materials of uranium ores and uranium ore concentrates.*

Based on KIPT:

– **Gamma-spectrometric estimation of the mass of uranium isotopes, uranium concentration in the matrix and matrix density in uranium-bearing materials stored in the closed containers on the basis ISOCS software.**

*The candidate will carry out research using characterized HPGe detector Canberra with an ISOCS software. KIPT will provide the candidate with consumables (liquid N, etc.), uranium standards (CRM 969 and CRM 146) and other uranium-bearing materials in different physical forms stored in the different types of containers. Candidate will work together with KIPT's PhD-student.*

– **XRF determination of the elemental composition of uranium ores and uranium ore concentrates.**

*The candidate will carry out research using WDXRF spectrometer Bruker S8 Tiger. KIPT will provide the candidate with consumables (inert gas, etc.) and certified materials of uranium ores and uranium ore concentrates. Additionally, it is possible to carry out studies on the preparation of fused bead samples for XRF and LA-ICP-MS researches. Candidate will use standard software for semi-quantitative XRF analysis QuantExpress, investigate various methods for result's correction (for example Compton correction) and finally will create the method for measurement based on calibration approach using certified materials. Candidate will work together with KIPT's PhD-student.*

– **ICP-MS determination of the trace-elements in the uranium ores and uranium ore concentrates.**

*The candidate will carry out research using ICP-MS spectrometer Element 2. KIPT will provide the candidate with consumables (inert gas, etc.) and certified materials of uranium ores and uranium ore concentrates. The main task for the candidate will be to strengthen the capabilities of KIPT in the probe preparation for different types of ICP-MS analysis (trace-elements, rare-earth elements, age determination, etc.). Preference is given to candidates with chemical background. Candidate will work together with KIPT's PhD-student.*

All information and documents required for the application must be English. The application form and the list of necessary documents are attached to the present call.

Application should be sent by email to Elena Taberko ([elena.taberko@stcu.int](mailto:elena.taberko@stcu.int)). The deadline for the call for applications is 15 February 2019 at midday, Kiev's time.

Late or incomplete applications will not be considered

If you should have any questions, please contact Elena Taberko at [elena.taberko@stcu.int](mailto:elena.taberko@stcu.int).