

## **ON THE CREATION AND PROSPECTS OF THE SCIENTIFIC RESEARCH CENTER «TOMSK COMPETENCE CENTER IN THE FIELD OF BEAM-PLASMA ENGINEERING AND SYNCHROTRON RESEARCH»\***

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As part of the implementation of Agreement No. 075-15-2021-1348 dated October 5, 2021, concluded between the Institute of High Current Electronics SB RAS and the Ministry of Science and Higher Education of the Russian Federation, the Scientific Research Center «Tomsk Center of Competence in the Field of Beam-Plasma Engineering and Synchrotron Research» (SRC TCC) was created as part of the network synchrotron and neutron research infrastructure in the Russian Federation. SRC TCC was established as a structural subdivision of the HCEI SB RAS to carry out scientific-methodological, scientific and educational activities in the field of synchrotron and neutron research and to provide organizational and methodological support for work in the field of beam-plasma surface engineering, carried out by research departments of the HCEI SB RAS and third-party organizations. The main functions of the SRC TCC are:

- accumulation of data and knowledge in the field of synchrotron research, obtained by scientific groups participating in the activities of the SRC TCC, and their distribution among the participants;
- implementation of own scientific research in the field of methods of using synchrotron radiation for surface engineering;
- in the field of educational activities of the SRC TCC - assistance in the implementation of educational programs for the training and retraining of personnel by higher professional education organizations that have licenses to carry out educational activities, including programs for the training of scientific personnel in graduate school;
- development of the procedure and conditions for the use of methods and equipment of SRC TCC;
- repair and maintenance of high-tech equipment of SRC TCC;
- coordination of teams of scientific and educational institutions to carry out activities aimed at the development and creation of the station «Surface» of the resource sharing center «SKIF» (Koltsovo).

At the moment, a new unique vacuum electron-ion-plasma installation (VEIPS-1) is being created for the SRC TCC, equipped with sources of gas and metal plasma, electron beams, which allows to carry out the processes of forming layers and coatings in a wide range of operating parameters, to diagnose generated plasma, and, most importantly, to prepare specimens and test the methodology for in situ studies of the processes of formation of layers on the surface of materials by X-ray diffraction using synchrotron radiation before its implementation at the VEPP-3 station (Siberian Center for Synchrotron and Terahertz Radiation, Novosibirsk).

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\*This work was carried out with the financial support of the Russian Federation represented by the Ministry of Science and Higher Education (project No 075-15-2021-1348) within the framework of event No. 1.2.5.