

# SRF “SKIF” SYNCHROTRON RADIATION SOURCE: IMPLEMENTATION STATUS AND RESEARCH OPPORTUNITIES

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Synchrotron Radiation Facility – Siberian Circular Photon Source “SKIF” (SRF “SKIF”) is a 4+ generation synchrotron radiation (SR) source. It is currently being built in the Kol'tsovo Science City near Novosibirsk. The SRF “SKIF” is a unique scientific complex consisting of 34 buildings and structures spread over an area of about 30 hectares [1]. The magnetic structure of the main storage ring with a perimeter of 476 m will provide a record low emittance of about 75 pm·rad, which will allow obtaining high-brightness synchrotron radiation beams. The Center will house up to 30 beamlines, including 14 beamlines which will use SR radiation from plug-in devices (wigglers or undulators) and 16 stations – SR from rotary magnets.

Currently, JSC Concern Titan-2 is actively engaged in construction work, some parts of the buildings have been transferred for the installation of unique scientific equipment of the accelerator complex and experimental stations. Commissioning of the accelerator complex and first-stage beamlines (1-1 “Microfocus”, 1-2 “Structural diagnostics”, 1-3 “Fast processes”, 1-4 “XAFS spectroscopy and magnetic dichroism”, 1-5 “Diagnostics in hard X-rays”, 1-6 “Electronic structure”, 1-7 “Basic methods of synchrotron diagnostics for educational, research and innovation activities of students”) will be finished by the end of 2025. In addition, active work is currently underway to develop conceptual designs for second-stage beamlines, which are planned to be implemented starting in 2026.

The main purpose of the SRF “SKIF” is to provide the infrastructure for conducting fundamental and applied research by scientific and educational institutions and enterprises in the real sector of the economy. The SRF “SKIF” will be used to conduct world-class research in various fields of chemistry, physics, materials science, medicine, biology and other scientific disciplines, including solving problems with high temporal and spatial resolution.

Further infrastructural development will be aimed at the implementation of modern instrumental methods that take full advantage of microfocusing, a high degree of spatial coherence, control of the polarization of the generated radiation, etc.

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## References

1. **Bukhtiyarov, A. V.** Synchrotron Radiation Facility “Siberian Circular Photon Source” (SRF SKIF) [Text] / A. V. Bukhtiyarov, V. I. Bukhtiyarov, A. N. Zhuravlev et al.// Crystallography Reports. – 2022. – Vol. 67, No. 5. – P. 690–711. DOI:10.1134/S1063774522050029.
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