

SSRF Phase-II Beamline Project: Status and Progress

Renzhong Tai

Shanghai Institute of Applied Physics, CAS, China

tairenzhong@sinap.ac.cn

The SSRF Phase-II Beamline Project is a key national scientific infrastructure project, including the construction of sixteen state-of-the-art beamlines, experiment-aiding labs, the accelerator upgrading, and some new buildings. It aims to improve substantially experimental capabilities particularly for energy, environment, material and life sciences. The construction of the project was officially started on November 20th, 2016 with a construction period of 6 years.

The state-of-the-art 16⁺ beamlines include: Energy-line, Dynamics-line, Radioactive Materials Beamline, Hard X-ray Spectroscopy, Hard X-ray Nano-probe, Medium-energy Spectroscopy, 3D Nano Imaging, S²-resolved ARPES, Laue Micro-diffraction, Surface Diffraction, Laser Electron Gama Source, P2 Protein Crystallography, Membrane Protein Crystallography, Ultra-hard X-ray Applications, Time-resolved USAXS, Fast X-ray Imaging Beamline, and a RIXS station. The user supporting facilities include materials laboratory, chemical laboratory, biomedical laboratory, in-situ instrumentation pool and user data center. The accelerator upgrade includes: super-bend based lattice configuration to increase the number of straight sections, development of various undulators and superconducting wiggler to extend photon energy range, and control of the electron bunch length to reach high single bunch current in the storage ring.

The design of SSRF Phase-II beamlines was carried out and continuously optimized since 2015. The engineering design of the first group of 7 beamlines was completed, and the key components for these 7 beamlines, including also the insertion devices and frontends, are fully in fabrication. New external buildings will end construction and put into use in 2018. It is anticipated that the first beamline will be in commissioning in 2018. All the beamlines will be completed by 2021. Besides of the development for key beamline components, the X-ray testing beamline has been installed and commissioned successfully. The status and the latest progress of the SSRF Phase-II Beamline Project will be presented in this talk.