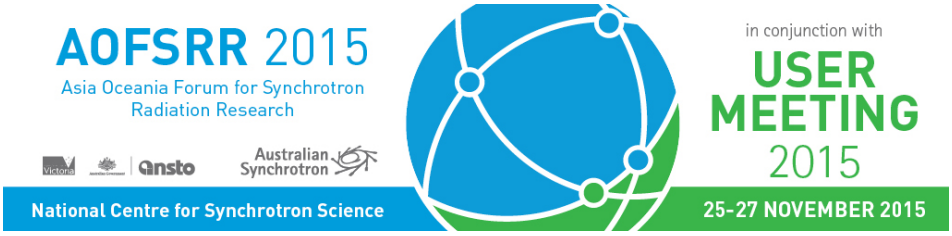

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Small angle X-ray scattering beamline development at SSRF

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BL16B1 at Shanghai Synchrotron Radiation Facility (SSRF) is a dedicated small angle X-ray scattering (SAXS) beamline in studying the micro structure and dynamic processes of polymers, nanomaterials, mesoporous materials, colloids, liquid crystals, metal materials, etc. Bending magnet is used as the photon source delivering X-rays of 5~20 keV. After a recent upgrade, the beam is focused to a size about 0.4 mm (H) × 0.5 mm (V) with a flux about 3 × 1011 phs/s @ 10 keV @ 240 mA. SAXS in the q range of 0.03 ~3.6 nm-1 and wide angle X-ray scattering (WAXS) in the q range of 4.5~33 nm-1 are the basic and most used experimental modes. Absolute intensity for SAXS can be calibrated using glass carbon or pure water. Measurements in continuous q range of 0.03~3.6 nm-1 can be carried out in the added simultaneous SAXS/WAXS mode. Grazing incidence SAXS and anomalous SAXS can also be performed. Support laboratories with kinds of conventional instruments for sample preparation and some in-situ devices for heating, shearing, stretching and helium atmosphere protection are available for end users. The beamline control system has been integated into an EPICS platform in Linux operation system, which is convenient for communication among the devices. In the past year, about 120 proposals were approved and over 4500 hours were allocated, bringing a feedback of over 100 SCI indexed publications.

Keywords

SAXS BL16B1 SSRF Development Upgrade WAXS GISAXS

Primary author(s) : Dr ZENG, Jianrong (Shanghai Institute of Applied Physics, Chinese Academy of Sciences)

Co-author(s) : Dr YANG, Chunming (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Mrs HONG, Chunxia (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Dr TIAN, Feng (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Prof. BIAN, Fenggang (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Prof. WANG, Jie (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Dr LIN, Jinyou (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Mr ZHOU, Ping (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Dr HUA, Wenqiang (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Dr LI, Xiaoyun (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Mr MIAO, Xiaran (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Dr LI, Xiuhong (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Dr WANG, Yuzhu (Shanghai Institute of Applied Physics, Chinese Academy of Sciences)

Presenter(s) : Dr ZENG, Jianrong (Shanghai Institute of Applied Physics, Chinese Academy of Sciences)

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