

## Indian beam-line at Photon Factory - Present Status

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In July, 2007 a possibility to set up an Indian beamline in Photon-Factory was discussed in a meeting in KEK and a Letter of Intent was signed between Department of Science and Technology of India (DST) and High Energy Accelerator Research Organisation of Japan (KEK). This item found special mention in the Joint Statement issued by the Prime Ministers of India and Japan on August 23, 2007. It said: "Science and Technology Number 21. The two leaders welcomed the signing of the Letter of Intent on Scientific and Technological Cooperation between the DST and the KEK on 24 July 2007, recalling the discussion in the India-Japan Science Council co-hosted by DST and the Japan Society for the Promotion of Science". Saha Institute of Nuclear Physics (SINP) was identified as nodal institute from India to set up this Indian beamline with financial support from DST.

The modality of leasing an existing beam line BL-18B at the Photon Factory (PF) delivering x-ray beams of desired quality and supplementing it with construction of experimental hutch with instruments dictated by scientific needs, has been thought to be the most optimal choice considering the costs, our research requirements of diverse Indian scientific community and the time frame. Initially the data taking was done with a borrowed goniometer from KEK starting from 2009 and actual construction of the experimental hutch started in 2010. The experimental hutch became operational in 2011 and has two connected goniometers to achieve data collection facilities for various types of experiments. These experiments include powder diffraction as a function of temperature (10K to 1000K) and pressure (< 30GPa); reflectivity and diffuse scattering from solid and liquid surfaces and interfaces - it should be mentioned that scattering from liquid surface here is a unique facility at PF and small Angle X-ray Scattering experiments in transmission and reflection geometry. The goniometers in the hutch can also be effectively used to study in-situ growth of epitaxial multilayered materials. The beamline will be open to general users soon after the India-Japan Steering Committee meeting to be held on 16<sup>th</sup> March, 2012.