

## **Indian Beamline at Photon Factory – A multipurpose x-ray beamline facility**

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The use of synchrotron radiation for research in science and technology has grown enormously in the past two decades. Extensive use of synchrotron radiation has become a must for performing front-end research, from material science to pharmaceutical research, spanning both basic science as well as applied research. This Indian beamline is conceived as a multipurpose beamline and the experimental facilities can be divided broadly in four different categories of experiments in x-ray synchrotron research. Facilities to perform diffraction experiments from powders and single crystals at various sample environments like low temperature, high temperature and high pressure is one of the goal in this beamline. Other facilities include experiments on in-situ growth of thin films and multilayers, reflectivity - diffuse scattering from solid surfaces/interfaces, small angle x-ray scattering and scattering from liquid surface. The liquid surface spectrometer will be first of its kind at PF synchrotron and can give us better understanding of the behavior of protein and other hydrophobic/hydrophilic organic materials around water surface. At present in the “Indian beamline”, we can do x-ray reflectivity, diffuse scattering from solid surfaces and thin films, diffraction experiments on single crystals and powders. We have recently installed low temperature cryostat facility where diffraction experiments down to 10K can be performed. We have also installed high pressure x-ray diffraction setup which can apply pressure at the sample up to 30 GPa.

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