

XAFS facility at INDUS-2 Synchrotron Radiation source and recent results.

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X-ray absorption fine structure (XAFS) spectroscopy is a well established materials characterisation technique for studying the local structure around selected elements that are contained within a material. The technique can be applied to any type of material viz. amorphous, crystalline, polycrystalline, surfaces, thin films, liquid, and solution.

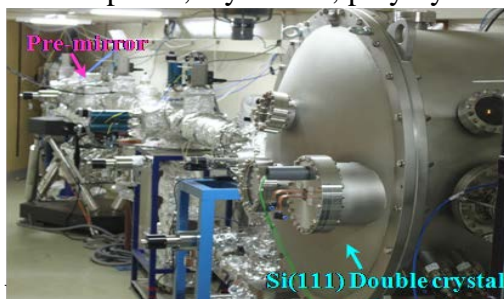


Fig. 1. A view of scanning XAFS beamline



Fig. 2. A view of dispersive XAFS beamline

Atomic and Molecular Physics Division, BARC has over the last few years developed a comprehensive XAFS measurement facility at INDUS-2 Synchrotron Radiation Source, RRCAT, Indore, India to cater the needs of the scientists and researchers of India. The above facility consists of two beamlines namely: i) Energy Dispersive EXAFS beamline and ii) Energy Scanning EXAFS beamline. Both of these beamlines are based on bending magnet source. The Dispersive EXAFS beamline [1], which had been set up at the BL-8 port of INDUS-2, and is operational for last few years, uses a bent crystal polychromator and a position sensitive CCD detector and works in the dispersive mode in the energy range of 5 -20keV. The second beamline viz., energy scanning type EXAFS beamline uses a double crystal monochromator and a collimating pre-mirror and focussing post-mirror based optical system. This beamline, which has been setup at BL-9 port of INDUS-2, has been commissioned recently. The beamline operates in the energy range of 4 to 25 keV. Efforts have been made over the last few years to widen

the scope of XAFS experiments by introducing low temperature, high temperature and high pressure facilities in the above beamlines. In this presentation, the current status of the XAFS beamlines, including their optical layout, operational parameters and the instrumentation available for the users along with future up-gradation plan will be discussed. Highlights of recent results will be utilised to demonstrate the beamline capabilities.

[1] Bhattacharyya D, Poswal A K, Jha S N, Sangeeta and Sabharwal S C 2009 Nuclear Instruments and Methods in Physics Research A 609 286.