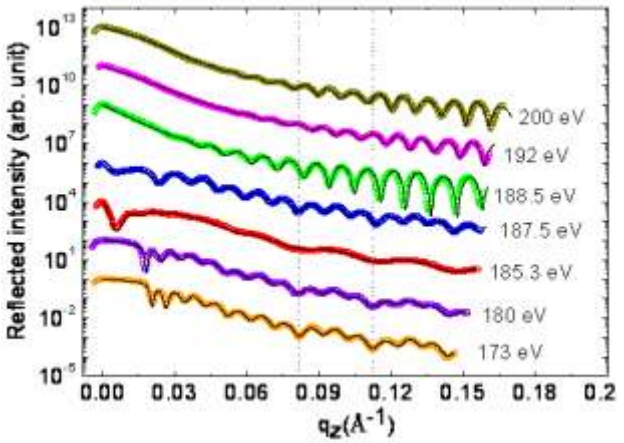

Fig.A.6.2: Soft XRR spectra of B_4C on Fe bi-layer film tuning photon energy near boron K-absorption edge using Indus-1 synchrotron radiation. Solid circles represent experimental data and the continuous line represents fitted value.

frequency oscillation reflect information of Fe layer. At 188.5 eV, 192 eV and 200 eV, bilayer effect is not observed due to significant absorption of radiation in B_4C layer. As the energy increases, amplitude of intensity modulation is observed at higher q_z values due to increased penetration depth. The amplitude of oscillation is more at 188.5 eV compared to 192 eV and 200 eV, due to relatively high-reflected intensity of vacuum/ B_4C and B_4C/Fe interface. This is due to higher optical contrast at this energy.

The results reveal that soft x-ray resonant reflectivity would be a powerful tool to study selected interfaces of any low-Z containing thin films. This is due to high tunable contrast of optical constants near absorption edge of constituent element.

Contributed by:
M. Nayak (mnayak@cat.ernet.in) and G. S. Lodha

A.7 : First diffraction pattern using Indus-2

We report initial commissioning of a part of the beamline (BL-12), for high-resolution x-ray diffraction on synchrotron radiation source Indus-2. The beamline has been designed using adaptive optics in such a way that it can be commissioned on both bending magnet and wavelength shifter sources, without any design changes. Fig.A.7.1 shows the photograph of the beamline along with the experimental station consisting of a six-circle diffractometer.

Fig.A.7.1: High-resolution x-ray diffraction beamline with six-circle diffractometer.

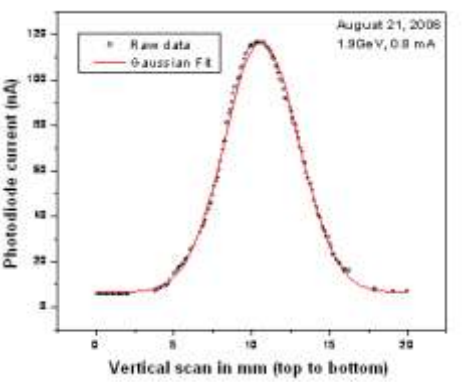

Fig.A.7.2: Vertical scan of SR beam

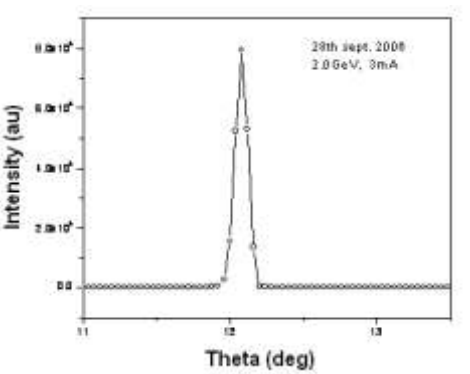

Fig.A.7.3: The first x-ray diffraction pattern (of pyrolytic graphite) recorded at 8.9 keV using an Indus-2 beamline.

Figure A.7.2 shows the vertical scan of the SR beam with Gaussian fit at a distance of 20m from the tangent point (FWHM = 0.27mrad). The beamline was aligned up to the exit of double crystal monochromator, without the pre and the post mirrors. Fig.A.7.3 shows the first X-ray diffraction pattern on this beamline, recorded on pyrolytic graphite at 8.9 keV.

Contributed by :
A.K. Sinha (anil@cat.ernet.in) and G. S. Lodha