



	<b>Experiment title:</b> Three dimensional imaging of dopant atoms in non perfect crystals with kinematical X-ray standing waves	<b>Experiment number:</b> HS-3220
<b>Beamline:</b> ID32	<b>Date of experiment:</b> from: February 14, 2007                      to: February 20, 2007	<b>Date of report:</b> December 2, 2011
<b>Shifts:</b> 18	<b>Local contact(s):</b> Tien-Lin Lee <sup>†</sup>	<i>Received at ESRF:</i>
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#### Report:

The aim of our experiment was to determine the three dimensional position of the La and Sr atoms in a mosaic LaSrMnO<sub>4</sub> single crystal. It was planned to do this with KXSW measurements using a specialized double circle diffractometer, fast data acquisition and control electronics and custom-made software. Due to technical problems, this apparatus could not be used in this beamtime. Instead, we tested a novell seven pixel silicon drift diode detector and did conventional KXSW measurements of doped GaN. Furthermore we made some test experiments with multiferroic BiFeO<sub>3</sub> thin films. Both samples have have a rather poor crystal quality, which forbids the use of the conventional XSW method.

Although the beam stability was much better with the new monochromator at ID32, it turned out that the data could not be analyzed. For KXSW it is essential to normalize the secondary signal with respect to the intensity of the incident beam. We used an ionization chamber as intensity monitor, however it turned out that the signal was non linear. This non-linearity leads to an unknown background in the data, which cannot be removed and makes the data unusable, because the weak standing wave signal in the tails of the curves cannot be distinguished from this unknown background.

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