Experimental report for experiment number MD-492

The aim of this experiment was to explore the in-line phase-contrast stereoscopic X-ray imaging (PCSXI) method when studying samples built up of low-atomic-number elements. A comparison with stereoscopic images obtained with the conventional attenuation-based X-ray imaging method was also to be carried out.

The experiment was performed at the bending magnet beamline (BM05). The samples were placed in the experimental hutch at 55 m distance from the X-ray source. Two samples were imaged using monochromatic, 30 keV, X-rays. Images have been recorded with the Fast Readout Low Noise (FReLoN) CCD camera provided by the ESRF. One of the samples was a breast-tissue phantom of 9 mm thickness with nylon fibers of different diameters (0.14 mm, 0.2 mm, 0.35 mm and 0.4 mm) glued on both sides of it. The second phantom was an assembly of different objects: a lavender flower (*Lavandula angustifolia)*, a lavender stem, a dandelion flower (*Taraxacum officinale*), two nylon fibers of 0.4 mm diameter and a dry noodle. These objects were mounted on a piece of play doe for stability reasons and later irradiated (imaged) in air. (The beam did not pass through the doe).

Different sample-to-detector distances, 8 cm for the attenuation based imaging and 103 cm for the phase-contrast imaging, were used. The sample was mounted on a stage including translation and tilt motors for alignment and a rotation motor for the image acquisition.

We collected images of high quality which are suitable for a publication containing the results of this experiment. The experiment was successful and we are grateful to the help that we received from the local contact.