

## COMPARISON OF IMAGES OBTAINED BY DEI AND REFRACTION-CONTRAST IMAGING.

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SPring-8/JASRI

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DEI (Diffraction Enhanced Imaging) is a new imaging technique that is now widely studied in the world. It differs from the refraction-enhanced imaging technique, which has been studied at SPring-8, in using an analyzer crystal to extract x-rays slightly deflected by the object. Since the refracted x-rays are also deflected slightly, images obtained by DEI contain contribution from refracted x-rays. Thus, although the techniques are different, acquired information may be similar.

We recorded refraction-enhanced images of various samples using BL20B2.

A refraction-contrasted image of a bone (Figure 1). Very fine cartilage and complex trabeculae below it are visualized.

An example showing difference between DEI and refraction-contrast imaging is Figure 2, which is an image of wires in a mammography phantom. In DEI, (figure 2A) an image is obtained by scanning an object in one direction with a linear x-ray beam. Thus, x-rays deflected to the direction of the scan are not used in the image. In refraction-contrast imaging, x-rays deflected in all directions are recorded, as in figure 2b. Notice that the vertical wire is visible in 2b but not 2a. The refraction-contrast image appears like an edge-enhanced absorption image while DEI usually forms images without much contribution from absorption.

We are going to compare the images obtained in the present study with those of the same samples recorded using DEI, and discuss the differences and similarities of the images obtained by the two techniques.

