Refraction-Contrast X-Ray CT for Mammography

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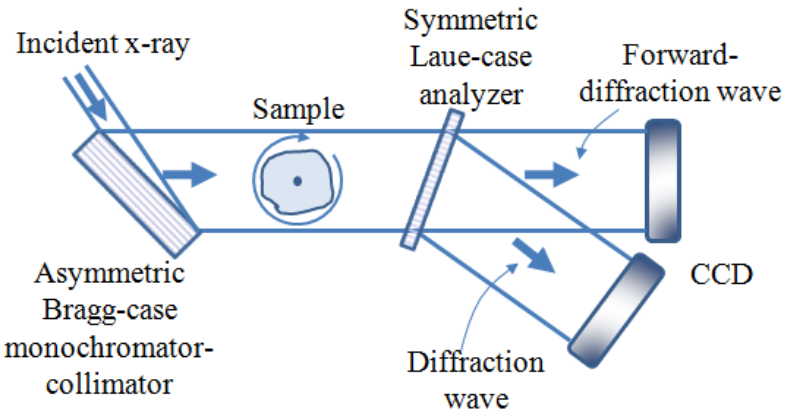

Fig. 1 Schematic of refraction-contrast CT imaging system using synchrotron radiation

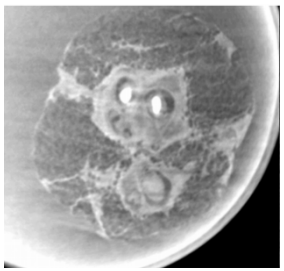

Fig. 2 Refraction CT image

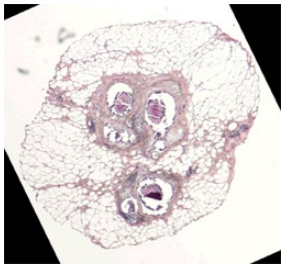

Fig. 3 Histological section of breast cancer

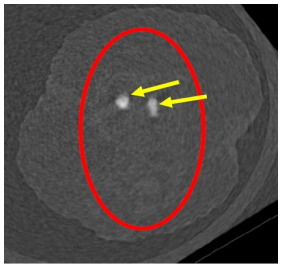

Fig. 4 Conventional CT image

Content:

Conventional X-ray CT (Computed Tomography) cannot delineate biological soft tissues at high contrast. Use of x-ray refraction enables us to image them clearly (See and compare Figs. 2-4). The imaging concept proposes a solution to the serious social problem of increased number of breast-cancer patients. In order to establish a novel CT technique for high-precision diagnosis in breast cancer, we develop a novel imaging system to efficiently collect data as well as a novel algorithm for more reliable image reconstruction.

In addition, we in parallel develop a software system of computer assisted diagnosis (CAD) to extract cancer regions automatically from the reconstructed images and to propose useful information for diagnosis to a clinician.

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