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Simultaneous K-edge subtraction tomography for strontium tracer using parametric X-ray radiation

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The X-ray source based on parametric X-ray radiation (PXR) has been regularly providing a coherent X-ray beam for application studies at Nihon University. Recently, three dimensional (3D) computed tomography (CT) is one of the most important applications of the PXR source. In particular, the methodology referred to as K-edge subtraction (KES) imaging is a typical application utilizing the energy selectivity of PXR. In order to demonstrate the applicability of PXR-KES, a simultaneous KES experiment for a sample containing strontium was performed using a PXR beam of the energy adjusted to the Sr K-edge 16.1keV. As the result, a 3D distribution of Sr was obtained from the subtraction between two tomographic images simultaneously acquired.

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