Summary

Feasibility Study of CdTe Semiconductor Detector for Gamma Camera —Evaluation of Planar Images—

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To evaluate the performance of a semiconductor detector for use in a gammacamera system, we assembled a detector with a small field of view—1 inch ×1 inch and 1 inch×2 inch—made from CdTe (Cadmium telluride). We then compared the planar images and energy resolution of the resulting detectors against those of a conventional gammacamera.

Pixel pitch of the detector was 1.6 mm×1.6 mm, and was manufactured by Acrorad Corporation.

Average FWHM of the energy spectrum for the semiconductor detector was 5.11% (SD: 0.80%, Best: 3.26%, Worst: 6.68%). The planar images obtained were of a letter phantom made from pieces of lead and of an IMP brain phantom. Since the field of view of the semiconductor detector was small, the image of the IMP brain phantom was acquired by moving the semiconductor over the collimated detector module until the area of the entire phantom was covered. The images from the semiconductor assembly were compared with those from a conventional gammacamera using the same conditions, and it was found that visual image quality was superior to those of the conventional camera system.

Key words: Semiconductor, Detector, CdTe, Gammacamera.