

## Summary

### Evaluation of Efficiency of a Semiconductor Gamma Camera

Hidenori OTAKE\*, Tetsuya HIGUCHI\*\*, Yasunao TAKEUCHI\*\*\*, Hideki RYUO\*\*\*,  
Masao JIMBO\*\*\*, Kunio MATSUBARA\*, Ichiro KOYAMA\*, Noboru ORIUCHI\*\*,  
Tomio INOUE\*\*\*\* and Keigo ENDO\*\*

*\*Division of Clinical Radiology, Gunma University Hospital*

*\*\*Department of Nuclear Medicine, Gunma University School of Medicine*

*\*\*\*Anzai Medical Corporation*

*\*\*\*\*Department of Radiology, Yokohama City University School of Medicine*

We evaluated basic characteristics of a compact type semiconductor gamma camera (eZ-SCOPE AN) of Cadmium Zinc Telluride (CdZnTe). This new compact gamma camera has 256 semiconductors representing the same number of pixels. Each semiconductor is 2 mm square and is located in 16 lines and rows on the surface of the detector.

The specific performance characteristics were evaluated in the study referring to NEMA standards; intrinsic energy resolution, intrinsic count rate performance, integral uniformity, system planar sensitivity, system spatial resolution, and noise to the neighboring pixels.

The intrinsic energy resolution measured 5.7% as

FWHM. The intrinsic count rate performance ranging from 17 kcps to 1,285 kcps was evaluated, but the highest intrinsic count rate was not observed. Twenty percents count loss was recognized at 1,021 kcps. The integral uniformity was 1.3% with high sensitivity collimator. The system planar sensitivity was 33,330 cpm/MBq with high resolution collimator and 766,767 cpm/MBq with high sensitivity collimator. The system spatial resolution (FWHM) was 2.0 mm and 2.2 mm when the distance between source and collimator was 0 cm and 3 cm respectively.

**Key words:** CdZnTe, Semiconductor, NEMA, Midget camera, Sentinel lymph node.