

Coded-aperture Imager in Nuclear World- Review

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Keywords: Coded-aperture gamma ray imager, GAGG(Ce), Modified uniformly redundant Array (MURA), SiPM array,

Identifying the exact location and type of the unknown radionuclide is important for the protection of the public and workers from radiation in the fields of medical imaging, nuclear industry, decommissioning, homeland security, and national defence. To achieve this goal, many researchers are developing various methods such as scatter camera, spatially coded-aperture, and time-encoded imaging technology. Among them, coded-aperture images are technologies using collimator-based detection systems, which have improved detection efficiency, image quality, and image acquisition speed significantly rapidly through the development of various types of mask combinations since they started with radiation images using pinholes in 1968. Coded-aperture imaging technology is progressing with the development of advanced mask pattern design, efficient detectors, and high-speed signal processing circuits for rapid and accurate radiographic imaging. In this paper, we would like to show the footprints of the Coded-aperture imaging system, the process of technology development, and the development vision from the perspective of the past, present and future in nuclear world in terms of sensitivity, field-of-view, image quality, angular resolution, and ect.

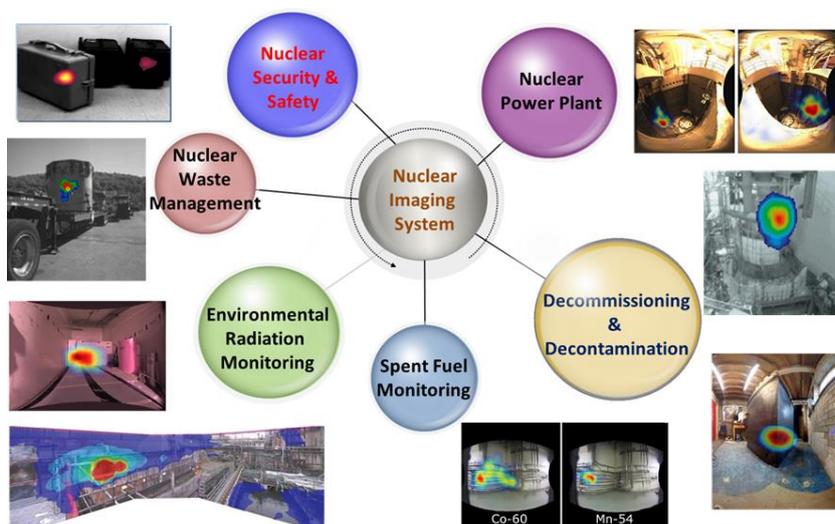


Fig. 1. Fields of application using coded-aperture-based radiation imager.

Acknowledgments

This work was partly supported by Korea Institute of Energy Technology Evaluation and Planning (KETEP) grant funded by the Korea government (MOTIE) (20181520302230) and by the Nuclear Safety Research Program through the Korea Foundation of Nuclear Safety (KoFONS) using the financial resource granted by the Nuclear Safety and Security Commission (NSSC) of the Republic of Korea (No. 1903011-0119-CG100).