

## The spectrum analysis of light emitted by LED using a CMOS RGB-based image sensor and feasibility study for its application

Bi-alkali photomultiplier tube (PMT) has a maximum quantum efficiency (QE) around 430nm. Fluor components dissolved in liquid scintillator (LS) are needed to have an emission wavelength in the PMT's QE region. We analyzed digital images for estimating the spectrum of LS, instead of using a spectrophotometer. Digital image was taken by camera based on complementary metal oxide semiconductor (CMOS) sensor and Bayer color filter array. This image has RGB components and we convert it to hue. Since hue and wavelength (H-W) are closely related, so we reconstruct H-W relationship with raw image to find out the emission wavelength of LS. In addition, various factors affecting the digital raw image were investigated.

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