



Contribution ID: 134

Type: Oral

Energy response and temperature dependence of Ce:GAGG and Pr:LuAG coupled to SiPM

Thursday 5 June 2014 11:40 (20 minutes)

Molecular imaging modalities require sensor systems capable of detecting and identifying gamma rays emitted by radio-tracers as well as providing the complete position information. The combination of dense, new scintillator materials with compact photon detector solutions insensitive to magnetic fields provides a promising prospect to meet the requirements in modern combined molecular imaging modalities. The energy response and temperature dependence of both, the scintillator and photon sensor has been studied for two scintillator materials, Pr:LuAG and Ce:GAGG coupled to either a n-on-p or p-on-n type SiPM. The performance was compared to a CsI crystal coupled to a conventional small vacuum based photon sensor.

Summary

We studied new combinations of inorganic scintillators and SiPM in comparison to more established technologies to evaluate their suitability for nuclear imaging modalities in medicine.

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Session Classification: V.b Health & Bio

Track Classification: Technology transfer: 5b) Health and healthcare