



Contribution ID: 148

Type: Poster

## Luminescent and scintillation properties of LFS-3 and GAGG:Ce crystals

Many of the contemporary photonics technologies dealing with detection of radiation owe their existence to diverse scintillation materials. The scintillators play a decisive role in the registration of X-rays and  $\gamma$ -quanta necessary in many fields of application in industry, medicine, fundamental research, and security where they are used to convert high-energy photons into visible light. Co-doped LFS-3 and mixed GAGG:Ce recently developed from Zecotek Photonics Inc. and Furukawa Co Ltd companies respectively. These crystals are very fast, with high density and very high light output. Their absorption, excitation and emission spectra were measured and compared. Results indicate that the difference between the emission intensities among GAGG:Ce samples seems to be more pronounced than in the case of LFS-3 crystal samples. However, the relative average deviation of the emission intensities does not exceed the experimental error. Moreover, pulse amplitude spectra were performed using for excitation a  $^{137}\text{Cs}$  gamma-radiation source. A standard  $\varnothing 40 \times 40$  mm NaI(Tl) detector was used for reference and values of energy resolution and light output (% to NaI(Tl)) were determined. Energy resolution was measured by reading out the light emerging from one end (3x3 face) of the crystals, using a Hamamatsu R1307 PMT connected to an appropriate amplifier and a Multichannel Analyzer (MCA). Best energy resolution values of 7.3% for a  $3 \times 3 \times 20 \text{ mm}^3$  GAGG:Ce crystal sample and 8.9% for a  $3 \times 3 \times 10 \text{ mm}^3$  LFS-3 sample were recorded.

### Acknowledgments

This research has been co-funded by the European Union (European Social Fund) and Greek national resources under the framework of the "Archimedes III: Funding of Research Groups in TEI of Athens" project of the "Education & Lifelong Learning" Operational Program.

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**Track Classification:** Sensors: 1d) Photon Detectors