Engineering
A Safer World

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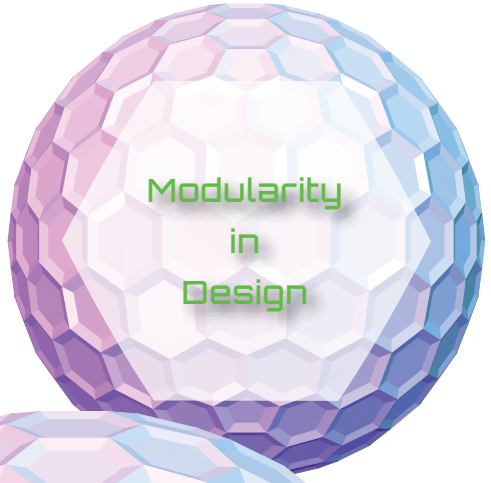

LYSO

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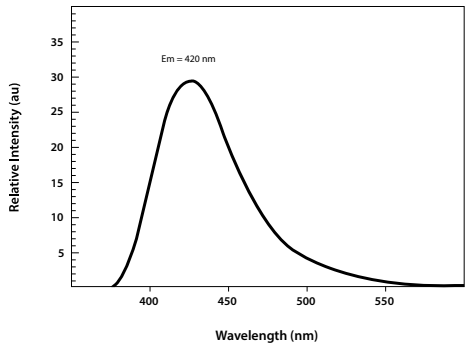
LYSO

LYSO crystal is an ideal generation scintillator crystal.

The LYSO crystal (Cerium-doped Lutetium Yttrium Orthosilicate, $Lu_xY_{2-x}SiO_5$) is a rare earth orthosilicate crystal, belonging to monoclinic system. It has many advantageous properties and is considered a superior replacement of NaI(Tl) and BGO for future SPECT and PET imaging applications.

RL - Spectra of LYSO



Feature	Parameter
LYSO	
Density (g/cm)	7.1
Melting Point (K)	2323
Index of Refraction	1.81
Effective Atomic No.(Z)	60
Hardness (Mohs)	5.8
Radiation Length (cm)	1.16
Hygroscopic	No
Cleaveage Plane	None
Wavelength (nm)	420
Decay time (ns)	41
Light Yield (photons/keV$_\gamma$)	20-30
Photoelectron yield [(% of NaI(Tl)] for γ-ray	75

Advantages of LYSO:

High light output
Short decay time
Excellent Energy Resolution
Low Cost

These properties make LYSO an ideal candidate for a range of ray detection applications in nuclear physics and nuclear medicine, which require higher timing and energy resolution.

LYSO emits 420 nm green light under the stimulation of high energy radiation as shown in Figure l. The wavelength couples well with PMT and SPD.

LYSO's light output relates to concentration of Lutetium atoms in the crystal, which is about 4 to 5 times of that of BGO. The resulting energy resolution is about 8% - 14%.

X-Z Lab can provide LYSO in any volumes required and can supply finished pixel or pre-assembled customer-specific arrays or module configurations.

Energy Spectra of 662 keV γ-rays from ^{137}Cs Source Measured with LYSO:Ce