Ce: LYSO scintillator crystals

DESCRIPTION

Ce: LYSO crystal (chemical formula $Ce:Lu_{2(1-x)}Y_{2x}SiO_3$) is a new type of scintillation crystal with excellent scintillation properties. The emission peak of Ce:LYSO is about 410 nm. Which matches well with the photomultiplier tube (PMT) and silicon photodiode (PD).

Ce: LYSO crystal exhibits stable physical and chemical properties, high thermal conductivity. It also shows high light output, and fast decay time (about 40ns) and high energy resolution. Ce: LYSO crystals are widely used in photomultiplier tubes, photoelectric counters, scintillation screens and medical equipment, high energy physics, well-logging, x-ray detection, γ-ray radiography.

FEATURES

- High density
- High light output
- Fast decay time
- Good energy resolution
- Good matching for PMT readout

APPLICATIONS

- γ-ray detection
- x-ray scanning systems
- Nuclear physics
- Nuclear radiation detection
- Nuclear medicine
- PET matrixes
- Security control

PARAMETERS

SCINTILLATOR PROPERTIES

Wavelength (Max. emission) (nm)	410
Wavelength range (nm)	TBA
Decay time (ns)	40
Light output (photons/MeV)	30000
Refractive index	1.82 @410nm
Radiation length (cm)	1.1
Optical transmission (um)	TBA
Transmittance (%)	TBA
Energy resolution (%)	8
Anti-radiation	$1*10^8$

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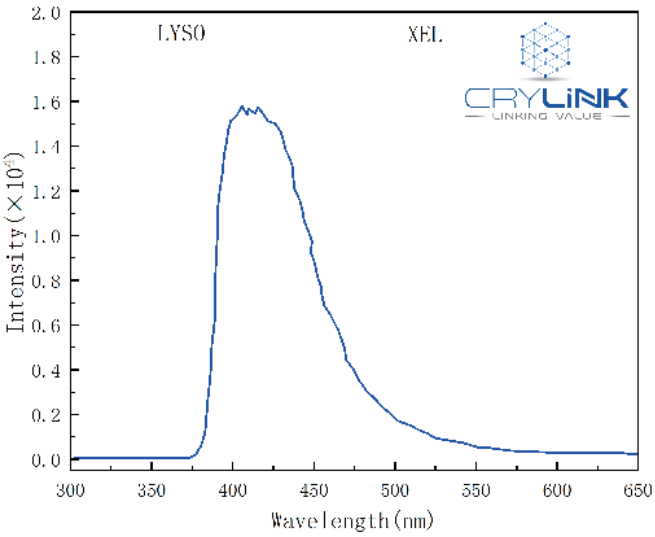
MATERIAL PROPERTIES

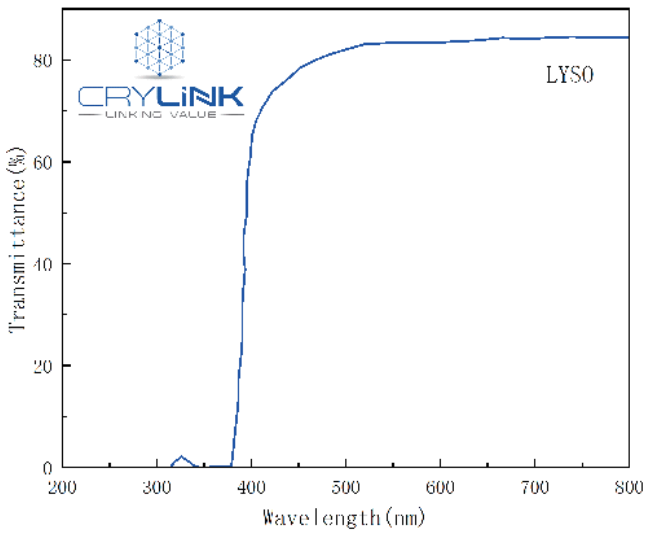
Chemical formula	Ce:LYSO
Density（$g.cm^{-3}$）	7.15
Melting Point (℃)	2050
Hardness (Mohs)	5.8
Hygroscopicity	No
Cleavage	No
Solubility ($g/100gH_2O$)	N/A
Crystal structure	Mono
Thermal expansion coeff (C^{-1})	$7.0*10^{-6}$

SPECTRA

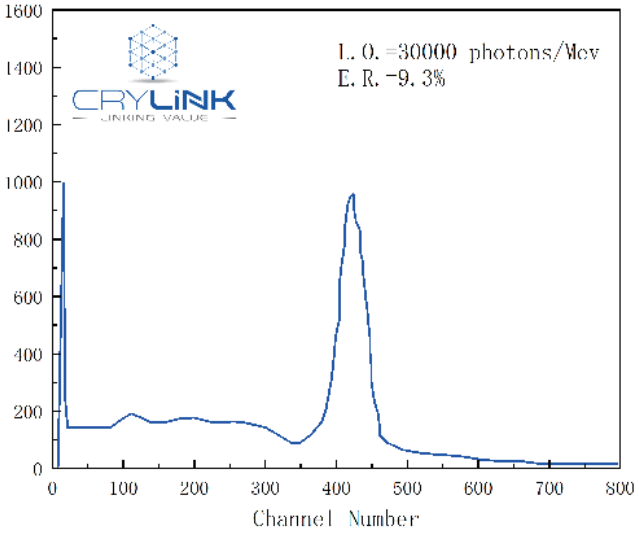


X-Ray excited Luminescence curve

SPECTRA



Transmittance curve



PMT:R1306 ; Reflector: Teflon(0.8mm);
Radiation source: Cs^{137} HV:650V
Light Output :30000 ph/MeV;
Energy resolution :9.3%

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