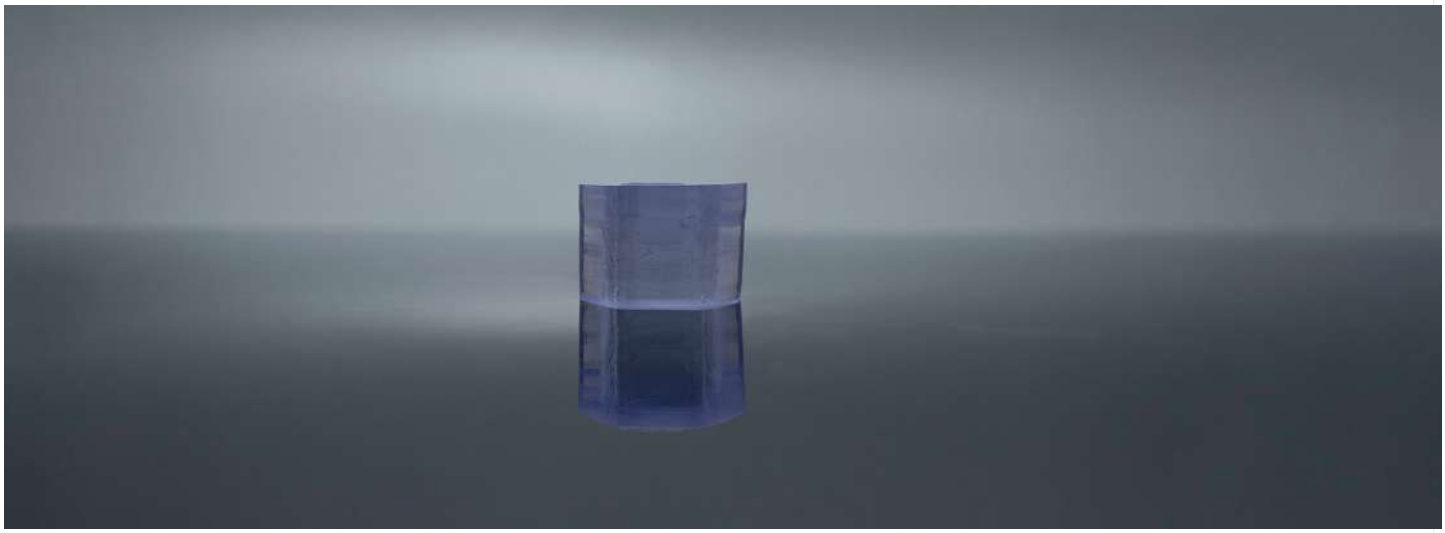
Eu:SrI2



DESCRIPTION

Europium doped Strontium Iodide scintillation crystals are high resolution, low background crystals due to their extreme good proportionality and very high light output. The scintillator is relatively slow with a decay time of several microseconds. They are considered prospective materials for spectro-surveymeter systems because of their high light output (over 80,000 photons/MeV) and an energy resolution value of ~3% at 662 keV1–6.

SrI2 (SrI2:Eu): Strontium Iodide scintillators enable high resolution gamma-ray spectroscopy because of the high light output and exceptional linearity of the material.

With the application of nuclear safety inspection technology in anti-terrorism and the continuous development of nuclear medical imaging, the requirements for light output and energy resolution of scintillation crystals are continuously improved. Security applications and nuclear non-proliferation depend on the rapid identification of highly enriched uranium, radioactive sources and other special nuclear materials. Halide crystals have been widely used as high-energy physics, nuclear medicine, safety inspection and address exploration as radiation materials since their invention in 1948. Eu:SrI2 is expected to become a new generation of gamma scintillator due to its high light output, good energy resolution and high effective atomic number.

APPLICATIONS

- Gamma-ray spectroscopy
- Hand-held radiation detection instruments
- Scintillation detector for safety inspection equipment
- Ultra-high resolution X-ray imaging
- Spectroscopy of high energy photons

FEATURES

- Extremely high light output
- Excellent performance at both high and low energies and linearity
- Inherent low background radiation
- Nonproportional thermal dependence
- Good energy resolution
- High density

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Eu:SrI2

PARAMETERS

Material and Specifications

Chemical formula	Eu: SrI2
Molar mass	341.43 g/mol (anhydrous)
Appearance	Colorless to white crystalline plates
Crystal structure	Orthorhombic, oP24
Space group	Pbca, No. 61

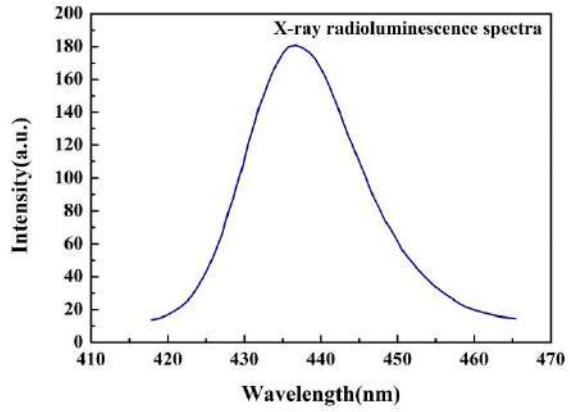
Physical and Chemical Properties

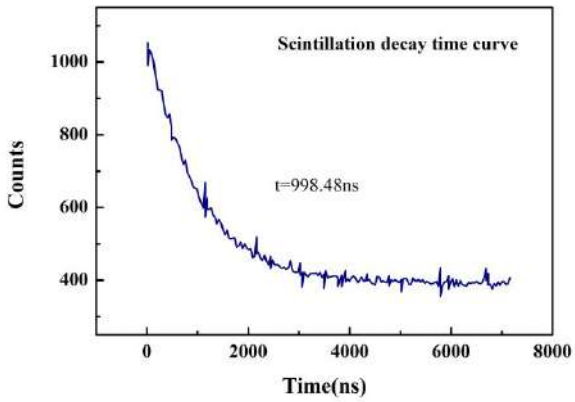
Atomic Number (Effective)	49
Density (g/cm3)	4.55
Melting point (°C)	538
Boiling point	1,773 °C
Hygroscopic	Yes
Atomic number (effective)	49
Thermal expansion coeff (C-1)	21.64*10-6
Magnetic susceptibility (χ)	–112.0·10–6 cm3/mol

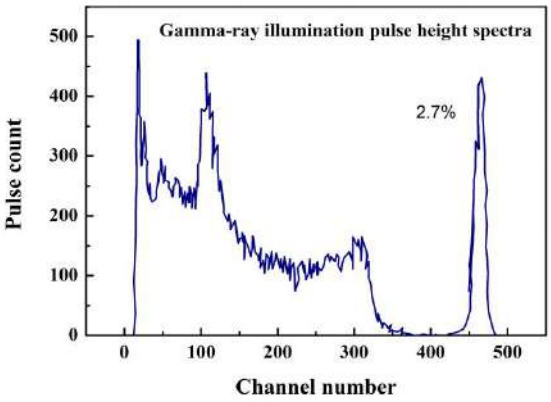
Optical and Spectral Properties

Wavelength(Max. emission) (nm)	435
Wavelength range(nm)	400~480
Decay time(ns)	1200
Light yield(photons/keV)	80
Light output relative to NaI(Tl) (%)	130
Refractive index	1.85
Radiation length(cm)	1.95
Energy resolution(%)	<3
X-ray Absorption Coef. at 100 KeV(cm-1)	2.88
X-ray Absorption Coef. at 662 KeV(cm-1)	0.13
Refractive Index	2.05 @ 435nm

Spectrum







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