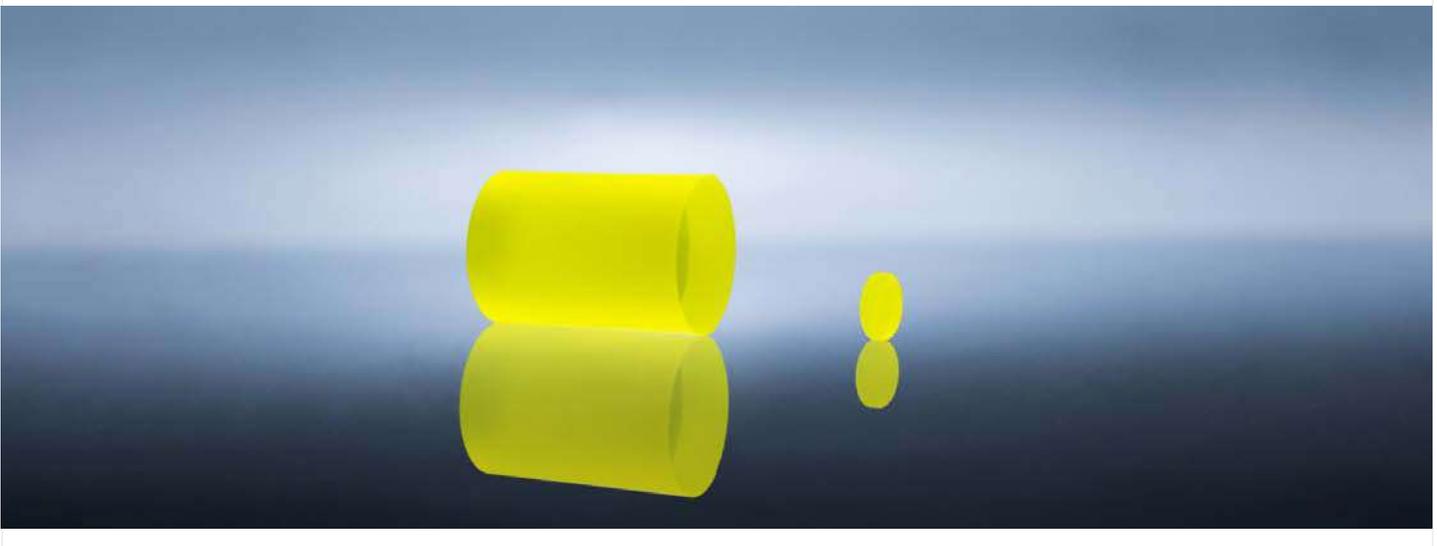


Ce:GAGG



DESCRIPTION

Radiation imaging systems are widely used in biomedical and radiation environmental monitoring, which stimulates the demand of advanced the design of high-resolution detectors and radiology imaging systems. The cerium doped multicomponent Gadolinium Aluminum Gallium Garnet crystals, referred as Ce:GAGG with the chemical formula of $\text{Ce:Gd}_3\text{Al}_2\text{Ga}_3\text{O}_{12}$, offer excellent scintillation properties as well as having entered the scintillator market in the current decade. The effective atomic number is 54.4, and the emission spectrum peak wavelength is 520 nm. Apart from the high light yield, good energy resolution, high effective atomic number, fast scintillation response, chemical stability also ruggedness and capability of large crystal growth are very important properties for Ce:GAGG crystals as well. The linearity of response on the gamma quanta shows Ce:GAGG crystals is a promising candidate for medical imaging techniques, such as X-ray radiography, X-ray computed tomography (CT), positron emission tomography (PET). Single crystal scintillators are frequently used for scanning electron microscopy (SEM).

FEATURES

- High light output
- Quite fast decay time
- High density
- Fair energy resolution
- Absence of intrinsic radioactivity
- Non-deliquescent

APPLICATIONS

- Scanning electron microscopy (SEM)
- γ -ray detection
- Medical imaging techniques
- Nuclear and high energy physics
- positron emission tomography (PET)
- X-ray computed tomography (CT)



Ce:GAGG

PARAMETERS

MATERIAL PROPERTIES

Property	Value
Materials	Ce:Gd ₃ Al ₂ Ga ₃ O ₁₂
Density (g/cm ³)	6.63
Melting point (°C)	1850
Hardness (Mohs)	8
Hygroscopicity	No
Cleavage plane	No
Solubility (g/100gH ₂ O)	N/A
Thermal expansion (C ⁻¹)	TBA*10 ⁻⁶

SCINTILLATOR PROPERTIES

Property	Value
Wavelength(Max. emission) (nm)	520
Wavelength range (nm)	475-800
Decay time (ns)	90
Refractive index(Max. Emission)	1.9
Radiation length (cm)	TBA
Transmittance (%)	TBA
Optical transmittance (um)	TBA
Reflection loss/surface (%)	TBA
Energy resolution (%)	≤6
Light yield (photons/keV)	50
Photoelectron yield [% of NaI(Tl)](for γ-rays)	TBA

SPECTRA

