

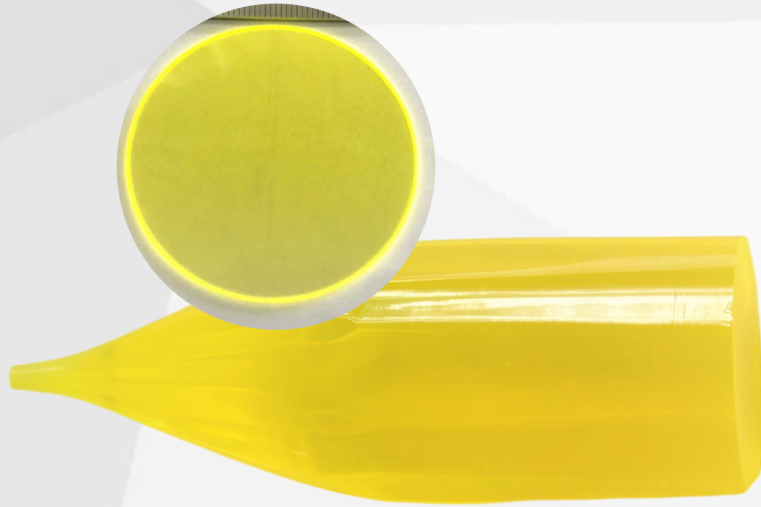
Ce:YAG crystals

Ce:YAG crystal is an important kind of scintillation crystals. Compared with other inorganic scintillators, Ce:YAG crystal holds a high luminous efficiency and a wide light pulse. Especially, its emission peak is 550nm, which well matched with the sensitivity detect wavelength of the silicon photodiode detection. Thus, it is very suitable for the scintillators of the equipments that taken the photodiode as detectors and the scintillators to detect the light charged particles.



At this time, a high coupling efficiency can be achieved. Furthermore, Ce:YAG can also be commonly used as a phosphor in cathode ray tubes and white light-emitting diodes.

Ce:YAG crystals



- High electron conversion efficiency.
- Good resolution. YAG(Ce) is clear, not diffuse like phosphor screens.
- YAG(Ce)'s light yield increases linearly with the total energy of the electron beam, whereas the response of phosphors dramatically decreases.
- YAG(Ce) is mechanically rugged and long lasting.
- Good thermal conductivity (13Wm⁻¹K⁻¹) prevents local heating from a concentrated electron beam.
- The mechanical ruggedness and good thermal conductivity of YAG(Ce) provide a hardness to electron beams, and thus a long lifetime is expected.

Basic Properties	
Chemical formula	$Y_{3-3x}Ce_{3x}Al_5O_{12}$
The crystal structure	Cubic crystal system
Lattice parameters	12.01Å
Melting point	1970°C
The density	4.57g/cm ³
The refractive index	1.82
Coefficient of thermal expansion	7.8x10 ⁻⁶ /K <111>, 0 - 250 °C
Thermal conductivity	14W/m/K, 20°C 10.5W/m/K, 100°C
Mohs hardness	8.5
Light output	8000ph/Mev
Maximum emission wavelength	550nm
Decay time	70ns
Energy resolution	6-7% (@662KeV)
The length of the radiation afterglow	3.5cm <0.005% at 6ms