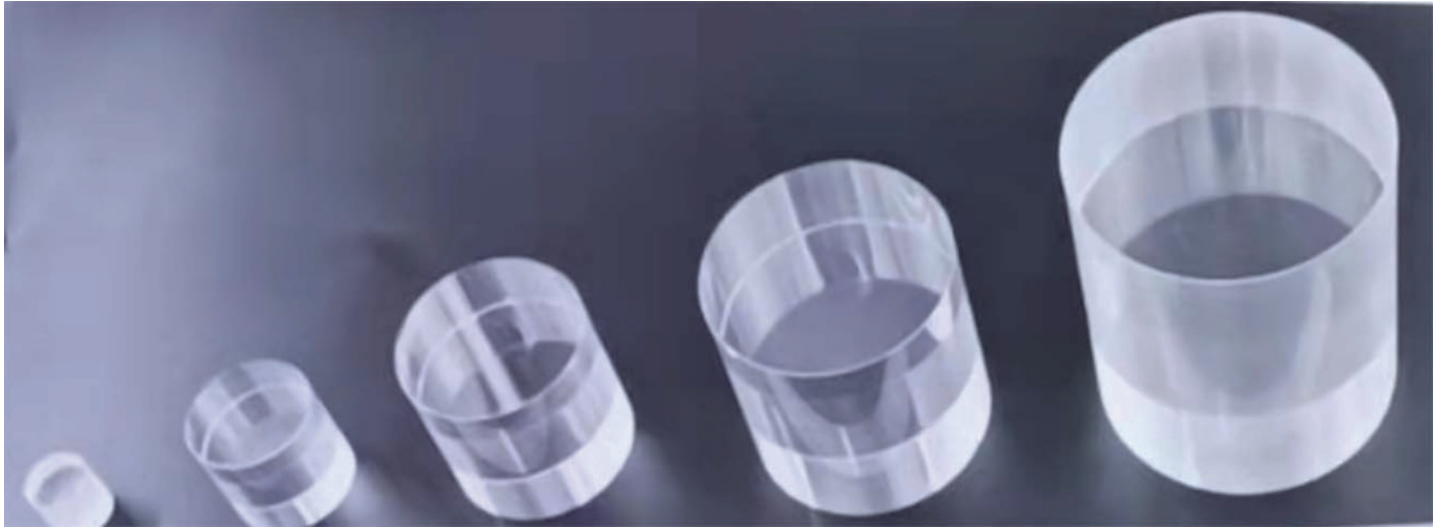


BGO scintillator crystals



DESCRIPTION

BGO crystal (chemical formula $\text{Bi}_4\text{Ge}_3\text{O}_{12}$) is a scintillation crystal with excellent comprehensive performance. As a new generation of scintillation crystals, BGO is widely used in high-energy physics experiments such as the European Nuclear Research Institute (CERN) large-scale electron-positron collider.

BGO crystal exhibits stable physical and chemical properties, high mechanical strength, high density, high refractive index, and resistance to harsh environments. It shows excellent scintillating performance, for example, high scintillating efficiency, high light yield, fast decay time. Its energy resolution is about 10%. BGO crystals are widely used in photomultiplier tubes, photoelectric counters, scintillation screens and other devices. Which is used to detect high-energy particles, such as X-rays, γ -rays, etc. The scintillation characteristics of BGO changes linearly with temperature. Combined with digital signal processing (DSP), it can work under harsh conditions. With small volume, it can work stably under refrigeration.

PARAMETERS

MATERIAL PROPERTIES

Properties	Value
Density	7.13 g/cm ³
Melting Point	1050°C
Refractive Index	2.15
Effective Atomic Number	73
Hardness	5 Mohs
Hygroscopicity	No
Thermal Expansion Coefficient	$7 \times 10^{-6}/^\circ\text{C}$
Crystal structure	cubic

SCINTILLATOR PROPERTIES

Properties	Value
Wavelength	480 nm
Lower Wavelength Cutoff	320 nm
Decay Time	300 ns
Light Output	8000–10000 photons/MeV
Photoelectron Yield	15–20% \propto NaI(Tl)
Temperature Response	-1.2%/°C
Afterglow	0.005% @3 ms
Energy Resolution	10.00%
Radiation length for 511KeV	1.1 cm



BGO scintillator crystals

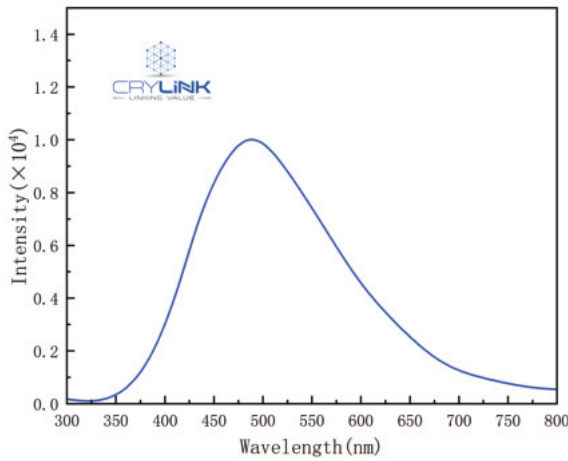
FEATURES

- High density and atomic number
- High light yield
- Fast decay time
- Chemically inert
- No hygroscopicity

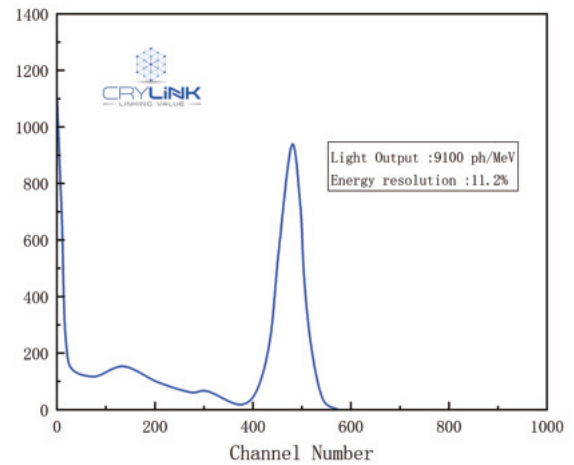
APPLICATIONS

- Positron emission tomography (PET)
- High-energy physics
- Nuclear medicine
- Geological prospecting
- Gamma pulse spectroscopy

SPECTRA

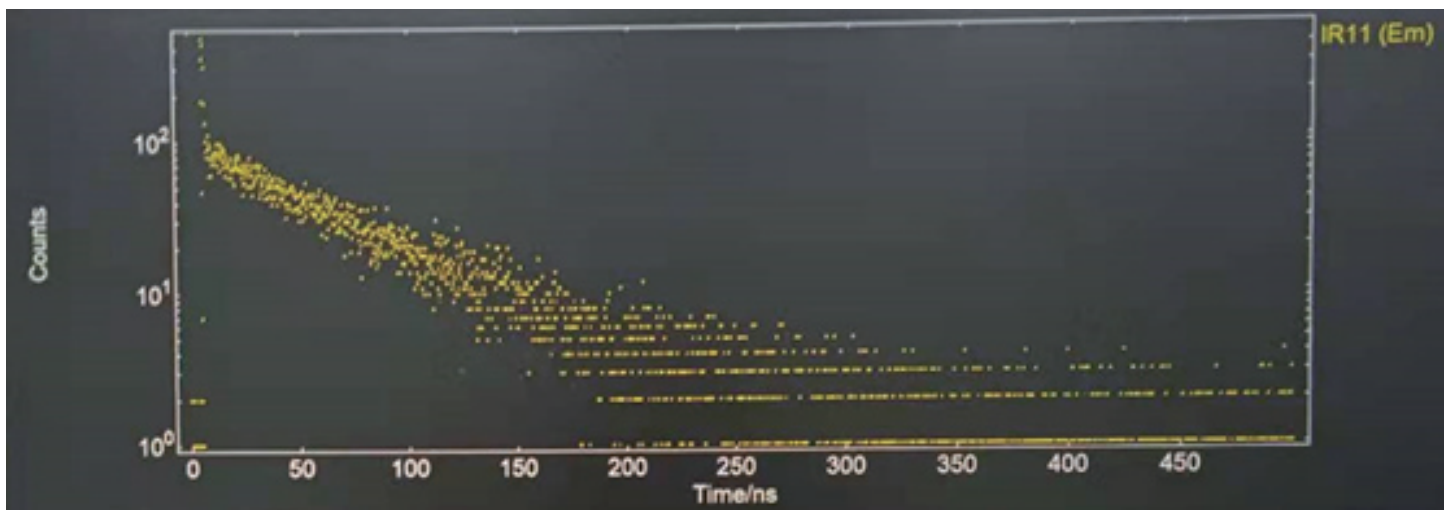


X-Ray excited luminescence curve



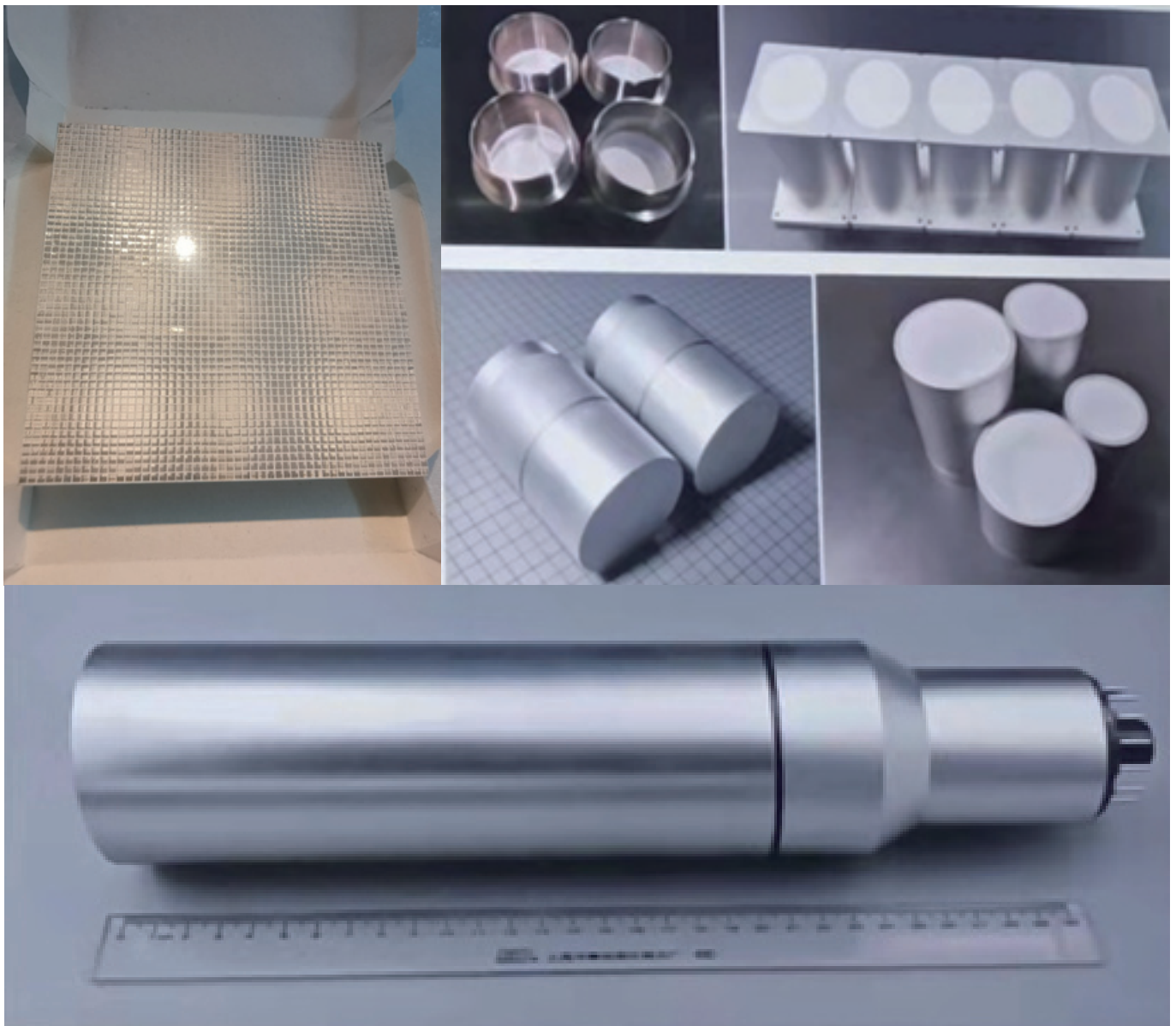
Light output curve & Energy resolution curve

PMT:R1306 ; Reflector: Teflon(0.8mm); Radiation source: Cs¹³⁷ HV:650V



BGO scintillator crystals

As NanJing Crylink Co.Ltd has advanced crystal cutting, polishing technology, and stable matrix assembly technology. Customized crystals and technical services can be provided to customers.



BGO Crystal matrix assembly

Crystal Pixel size: 2x2mm / can be customized

Reflector Interpixel: 0.2mm BaSO₄/ESR

Array: 300 x 100 x 4 mm³/ can be customized

