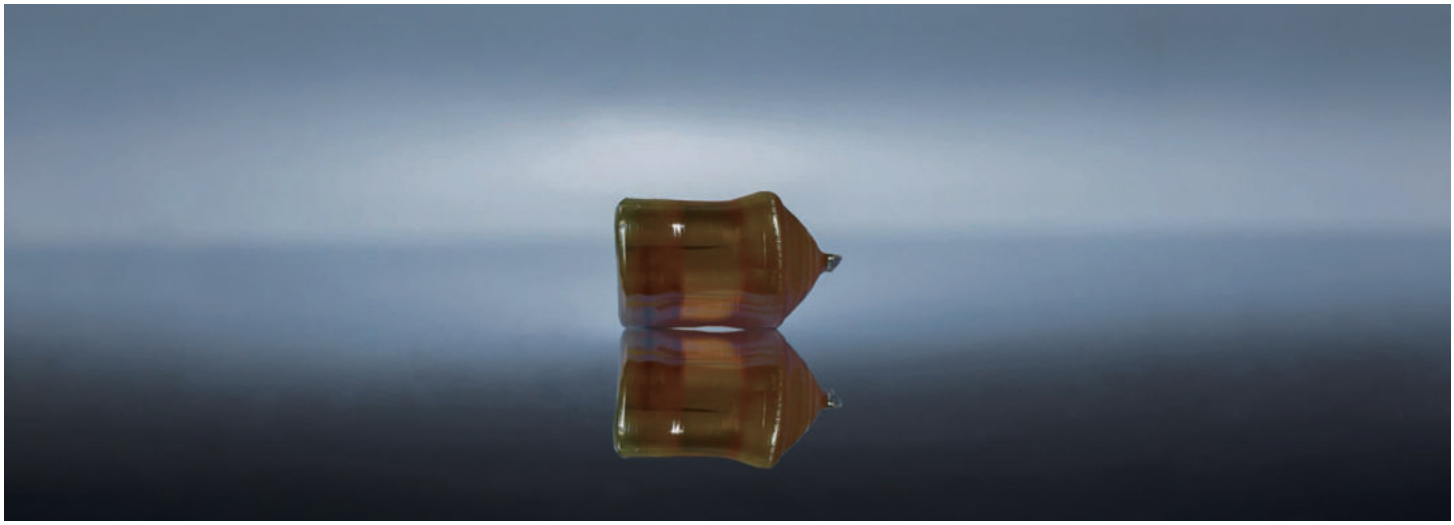
$CdWO_4$ Scintillator Crystal



DESCRIPTION

Cadmium tungstate ($CdWO_4$ or CWO) is monoclinic crystal with excellent comprehensive scintillation properties. The emission peak of $CdWO_4$ crystal is around 480nm (with emission range between 380-660 nm), with extremely low afterglow, good radiation resistance. It shows high density, with a high light output of 13000 photons/MeV. Which has been widely used in the security inspection, medical X-CT, Positron emission tomography (PET) and other industries. The combined application of $CdWO_4$ crystal and B4C can form a compact ϒ- ray and neutron radiation detector. It can also be applied as a scintillation screens for α and β particles.

FEATURES

- High light output
- Good radiation resistance
- Low afterglow
- High density
- High X-ray absorption coefficient
- Low intrinsic radioactivity level

APPLICATIONS

- Medical Computed Tomography (CT)
- Positron emission tomography (PET)
- The well logging
- The control and inspection for industrial process
- Nuclear weapons and waste monitoring

PARAMETERS

SCINTILLATOR PROPERTIES

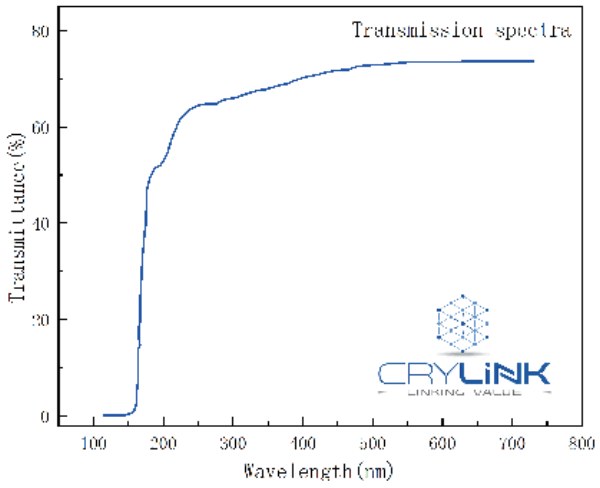
Wavelength (Max. emission) (mm)	490
Wavelength range (mm)	380~800
Decay time (ns)	14000
Light output (Photons/MeV)	13000
Refractive index	2.2~2.3
Radiation length (cm)	1.06
Afterglow (%)	<0.1

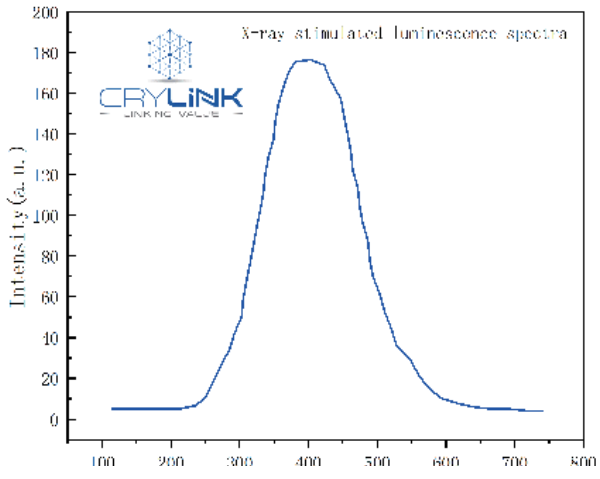
$CdWO_4$ Scintillator Crystal

MATERIAL PROPERTIES

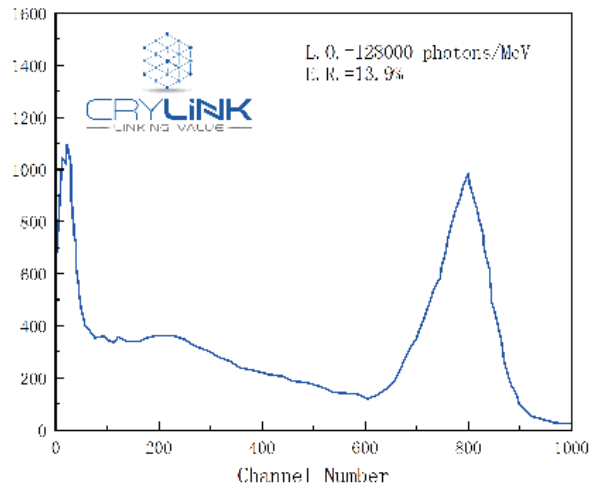
Chemical formula	$CdWO_4$
Desity (g/cm^3)	7.9
Melting point (℃)	1598
Hardness (Mho)	4-4.5
Hygroscopic	No
Clesvage	<110>
Thermal expansion coeff (C^{-1})	$1.02*10^{-6}$

SPECTRA

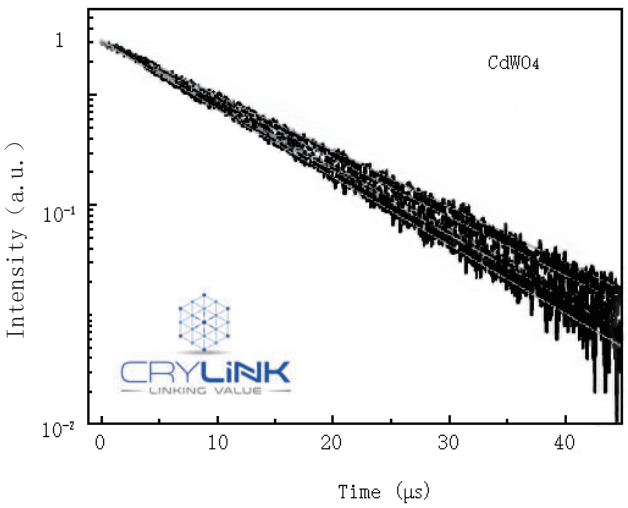




SPECTRA



Light output curve & Energy resolution curve



PMT:R1306 ; Reflector: Teflon(0.8mm);
Radiation source: Cs^{137} HV:650V
Light Output :128000 ph/MeV;
Energy resolution :13.9%