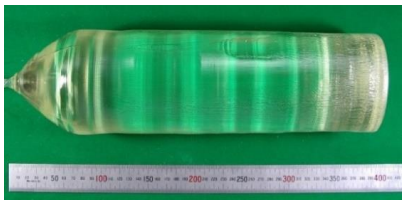
NEW

GSO

Key Scintillator Materials for Novel Radiation Detectors

Features

- ✓ Good balance of all scintillation characteristics
- ✓ Good energy resolution up to 150ºC
- ✓ Verity decay by Ce concentration
- ✓ Good radiation-hardness
- ✓ No radiation background
- ✓ Better transparency by Zr doping

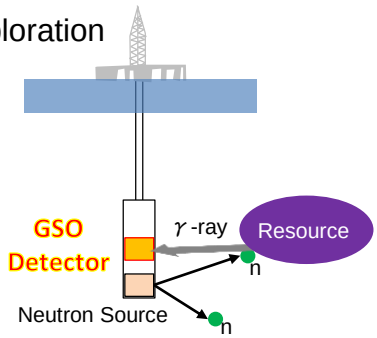


GSO (Ce:Gd_2SiO_5)

Applications

Positron Emission Tomography

Underground Resource Exploration



Comparison of Typical Scintillators

	GSO	LGSO	LSO	BGO	NaI:Tl
Light output (NaI=100)	20	80	80	12	100
Decay time (ns)	30-60	41	41	300	230
Peak wavelength λ_{em} (nm)	430	410	410	480	415
Density (g/cm^3)	6.7	7.3	7.4	7.13	3.67
Effective atomic number Z_{eff}	58	63	63	77	50
Hygroscopicity	No	No	No	No	Yes
Self-radiation	No	Yes	Yes	No	No
Temperature quench	150℃	-	-	-	-

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Contents are things of 24-Jan-2017.

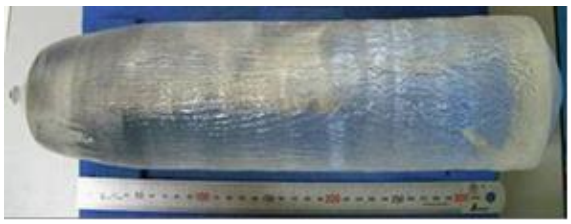
NEW

LGSO

Key Scintillator Materials for Novel Radiation Detectors

Features

- ✓ High light output
- ✓ Good energy resolution
- ✓ Fast decay
- ✓ High stopping power
- ✓ Good for TOF PET



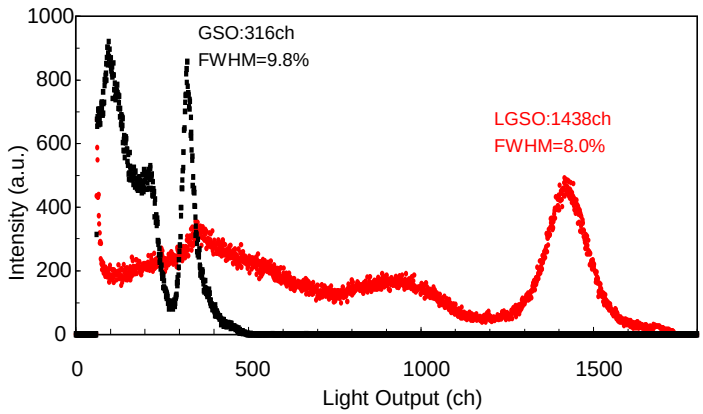
LGSO ($Lu_xGd_{(2-x)}SiO_5$)

Applications

Positron Emission Tomography

Property

Typical energy spectra of ^{137}Cs



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NEW

Fast-LGSO

Key Scintillator Materials for Novel Radiation Detectors

Features

- ✓ **Faster decay than conventional LGSO**
- ✓ **Other performances such as light output are similar to conventional LGSO.**

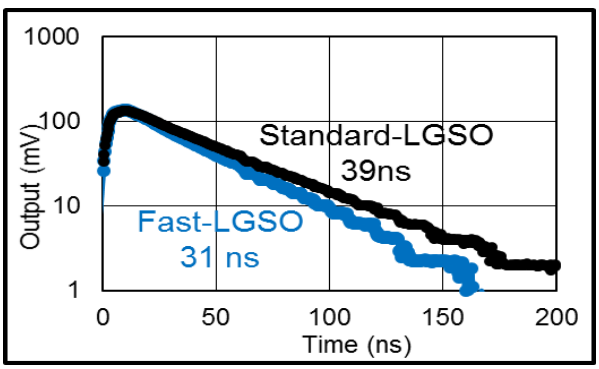
Fast-LGSO *($Ce:Lu_xGd_{(2-x)}SiO_5$)*

Applications

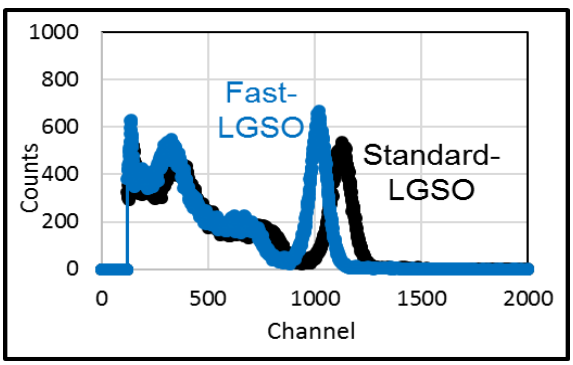
Positron Emission Tomography

Properties

Decay curves



Energy spectra



Comparison of typical scintillators

	NaI:Tl	LGSO	Fast-LGSO	LSO	LYSO
Light yield (NaI=100)	100	80	70 - 80	~80	~80
Decay time (ns)	230	39 - 42	30 - 35	~40	~40
ΔE/E (^{137}Cs, %)	7	8 - 10	8 - 10	~10	~10
Density	3.7	7.3	7.3	7.4	7.2
Hygroscopicity	Yes	No	No	No	No
Self-radiation	No	Yes	Yes	Yes	Yes

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