

Scintillating crystals: ${}^6\text{LiI}(\text{Eu})$

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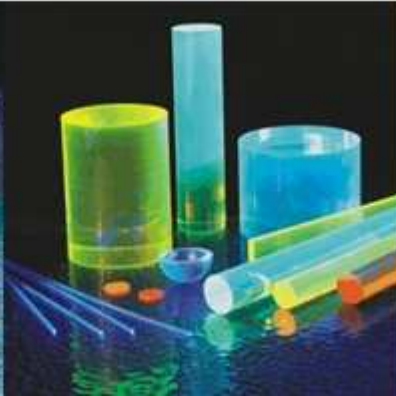
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Characteristics

- High neutron cross section
- High light output
- Detection of thermal neutrons
- Thermal neutrons spectroscopy

Conditions

- Dimensions offered
- Import/export restrictions
- Special requirements



Characteristics

Conditions

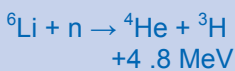
Physical properties

Very high sensitivity to low energy neutrons

Capture cross section for thermal neutron:
940 barns

Comparison with NaI detectors

Detection is based on the reaction:



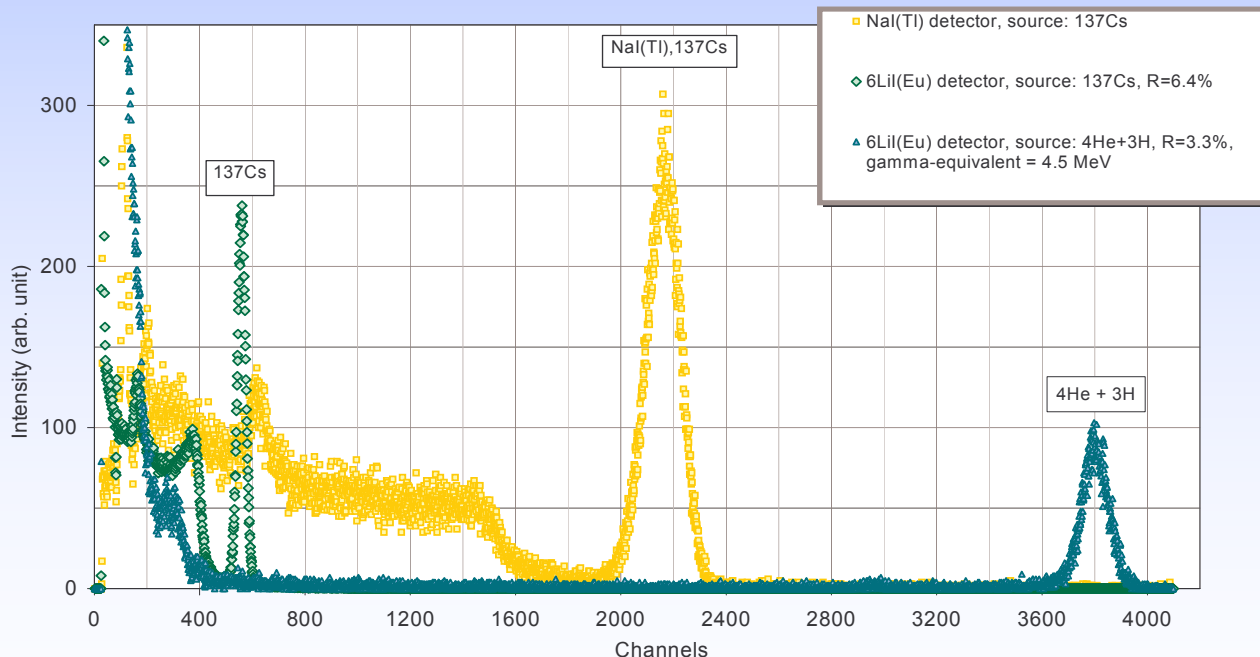
${}^6\text{Li}(\text{Eu})$ is the most compact, economical and practical scintillator when it comes to separate the signal coming from neutrons

Single crystals of ${}^6\text{LiI}(\text{Eu})$ are known to be efficient scintillators for detection of thermal neutrons on high gamma-radiation background.

${}^6\text{LiI}(\text{Eu})$ - physical properties chart

${}^6\text{LiI}(\text{Eu})$ - Lithium Iodide doped with Europium	
Density (g/cm ³)	4.06
Max. luminesc. emission (nm)	470
Scintillation decay time (μs)	1.4
Refraction index at max emission	1.96
Resol. of thermal neutron peak (%)	4 – 7
Light output (photons/MeV equ.)	11,000
Lower wavelength cutoff (nm)	425
Gamma-equivalent (MeV)	3 - 5
Melting point (K)	719
Thermal expansion coefficient (K ⁻¹)	40x10 ⁶
Cleavage plane	<100>
Hygroscopic	yes

Distribution spectra of pulse amplitudes from detectors based on $\text{LiI}(\text{Eu})$ of dimensions 12.5 dia. x 8 mm and $\text{NaI}(\text{TI})$ under excitation by gamma-radiation of ${}^{137}\text{Cs}$ and thermal neutrons from Pu-Be



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Characteristics

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Dimensions

Typical applications require thin sheets of scintillator: 1 mm thick, and up to 50 mm in diameter, but larger dimensions can be achieved.

Import/export regulation

The Lithium-6 isotope present in the detector requires special authorizations for export depending on international and national regulations.

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Getting more information on Detec's offer for $^6\text{Li}(\text{Eu})$

On our website

- Online information on $^6\text{Li}(\text{Eu})$: [www.detec-rad.com/6Li\(Eu\)](http://www.detec-rad.com/6Li(Eu))
- All scintillators provided: www.detec-rad.com/scintillators
- Requesting prices: www.detec-rad.com/quickquote

Contacting us

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Dimensions

We will be glad to answer your questions on other dimensions available

Advised minimum order is of a few dozens units, contact us for details

Information

We are doing efforts to provide information online, your advices are most welcomed

Nuclear Expertise

Detection Proficiency

Custom Specification Products

Detec Canada

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