

# Gamma Scintillator Properties

SrI<sub>2</sub>

High Energy Resolution

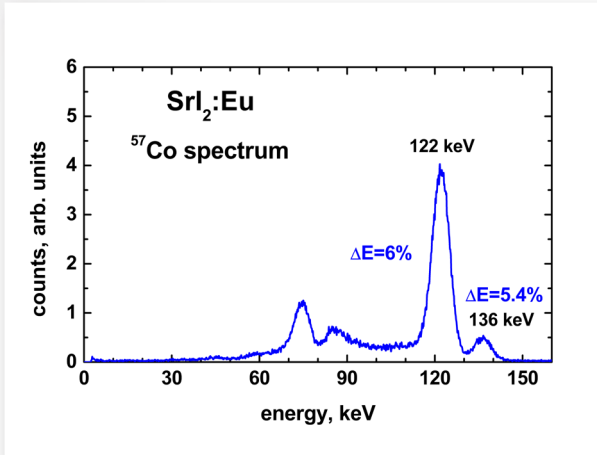
High Light Output

Low Background

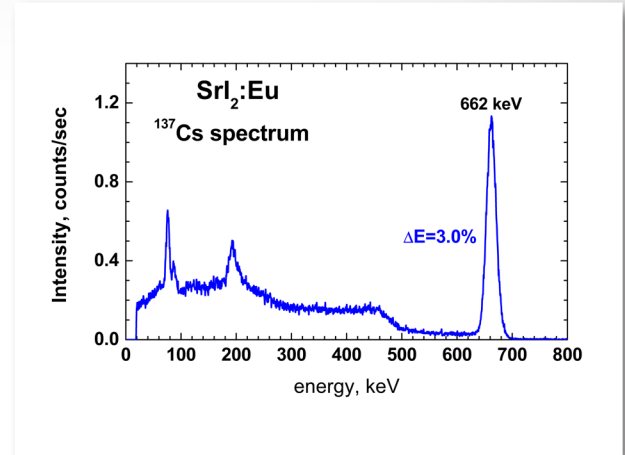
The Science Behind the Technology

 **RMD**  
A Dynasil Company

# Gamma Scintillation Detector



**Co-57 Energy Spectrum**



**Cs-137 Energy Spectrum**

SrI<sub>2</sub>

Strontium Iodide (SrI<sub>2</sub>:Eu) scintillators enable high resolution gamma-ray spectroscopy because of the high light output and exceptional linearity of the material. SrI<sub>2</sub>:Eu performs well at both high and low energies. Lack of intrinsic radioactivity reduces background counts and should reduce false alarms.

SrI<sub>2</sub>:Eu scintillators can be used in a range of hand-held radiation detection instruments, as well as medical, industrial, and environmental applications. Packaged SrI<sub>2</sub>:Eu scintillators can easily be incorporated into hand-held radiation detectors and should enhance their performance considerably when compared to a NaI:Tl scintillator. The energy resolution for 662 keV <sup>137</sup>Cs gamma rays using a 1 inch cylinder of SrI<sub>2</sub>:Eu is better than 4%.

Material .....	SrI <sub>2</sub> :Eu
Melting Point .....	538°C
Density .....	4.59 g/cm <sup>3</sup>
Zeff .....	49
Crystal Structure .....	Orthorhombic
Water Solubility .....	Hygroscopic
Refractive Index .....	1.85
Coefficient of Thermal Expansion .....	2.164 x 10 <sup>-5</sup> /°C (lattice b)

Emission Spectral Range .....	400 – 480 nm
Peak Scintillation Wavelength .....	~ 435 nm
Decay Constants (Eu <sup>2+</sup> ) .....	1 – 5 μs *
Scintillation Light Yield .....	80,000 ph/MeV
X-ray Absorption Coef. at 100 KeV .....	2.88 cm <sup>-1</sup>
X-ray Absorption Coef. at 662 KeV .....	0.13 cm <sup>-1</sup>
Radiation Length .....	1.95 cm
* Depending on sample size	