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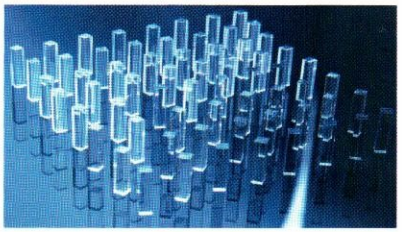
SCINTILLATING CRYSTALS LuYAP, LuAP, YSO, LSO, YbAP, ...

Opto Materials develops and manufactures a range of optical and laser crystals and is now offering scintillating crystals suitable for radiation detector modules for medical imaging and industrial applications, high energy physics, security scanning and research applications.
LuYAP (lutetium yttrium aluminum perovskite) and LuAP (lutetium aluminum perovskite) have been known for decades and are recognized as ideal hosts for radiation detection applications due to their exceptional combination of properties.

Lu(Y)AP Scintillating Crystals & Pixels

Key Advantages of Lu(Y)AP
- Very high density
- Fast decay time
- Excellent energy resolution



Our Competitive Advantages
- Volume crystal growth
- Crystal components manufacturing
- Possible detector array & module assembly
- New product development

Customization
- Pixels and arrays available
- Different specification on sizes from pixels and array available

Comparing the properties of Lu(Y)AP with similar crystals

Property / Material	LSO	BGO	Lu(Y)AP	$LaBr_3$	LYSO
Density (g/cm^3)	7.4	7.1	7.0 - 8.3	5.3	7.1
Energy Resolution	9%	15%	7% - 9%	3%	10%
Light Yield (relative to LSO)	1	< 0.2	0.5 – 0.7	2	1.2
Decay time (ns)	40	300	17	35	35
Physical robustness	Hard	Hard	Hard	Hygroscopic	Hard

Lu(Y)AP Properties	
Formula	$Lu_{1-x}Y_xAlO_3:Ce$
Z_{eff}	65
Stopping power	148
Attenuation length	1.05 cm at 511 KeV
λ_{peak}	365 nm
Refractive index	1.95
Molecular weight	224.13 g/mol
Crystal structure / pahse	Orthorhombic / perovskite

Lu(Y)AP *excellent energy resolution, fast decay time and high stopping power make it a unique scintillation material to be used in advanced scintillation applications. Also, its excellent high temperature performance is not typical of any other scintillating material.*
In medical imaging Lu(Y)AP is essential in the phoswich design, being an attractive choice for next generation PET scanners that will ensure remarkable enhancements in PET diagnostics in terms of better image resolution, reduced scan time, reduced random noise and low scatter fraction.
In addition to medical imaging diagnostics, Lu(Y)AP mentioned features and its very good linearity response make it a candidate of choice also for all applications where precise gamma ray spectroscopy is required, such as industrial, homeland security equipment and high energy physics.