

## Scintillation materials and their most common applications

Materials	Important Properties	Major Application
<b>NaI(Tl)</b>	Very high light output, good energy resolution	General scintillation counting, Health Physics, environmental monitoring, high temperature use
<b>CsI(Tl)</b>	Non-hygroscopic, rugged	Particle and high energy physics, general radiation detection, photo diode readout, phoswiches
<b>CsI(Na)</b>	High light output, rugged	Geophysical, general radiation detection
<b>CsI(undoped)</b>	Fast, non-hygroscopic	Physics (calorimetry)
<b>CaF<sub>2</sub>(Eu)</b>	Low Z, high light output	$\beta$ detectors, $\alpha/\beta$ phoswiches
<b>LaCl<sub>3</sub>:Ce(0.9)</b>	Very high light output, very good energy resolution	High resolution scintillation spectroscopy, Health Physics environmental monitoring
<b>CeBr<sub>3</sub></b>	Very high light output, very good energy resolution, low background	High resolution spectroscopy, low background applications
<b><sup>6</sup>LiI(Eu)</b>	High neutron cross-section, high light output	Thermal neutron detection and spectroscopy
<b><sup>6</sup>Li-glass</b>	High neutron cross section, non-hygroscopic	Thermal neutral detection
<b>BaF<sub>2</sub></b>	Ultra-fast sub-ns UV emission	Positron life time studies, physics research, fast timing
<b>YAP(Ce)</b>	High light output, low Z, fast	MHz-X-ray spectroscopy, synchrotron physics
<b>LYSO</b>	High density and Z, fast	Physics research, PET, High Energy Physics
<b>BGO</b>	High density and Z	Particle physics, geophysical research PET, anti-Compton spectrometers.
<b>CdWO<sub>4</sub></b>	Very high density, low afterglow Slow decay times	DC measurement of X-rays (high intensity), readout with photodiodes, Computerized Tomography (CT)
<b>PbWO<sub>4</sub></b>	Fast, high density, low afterglow	Physics research (calorimetry)
<b>Plastics</b>	Fast, low density and Z high light output	General counting, particle and neutron detection.