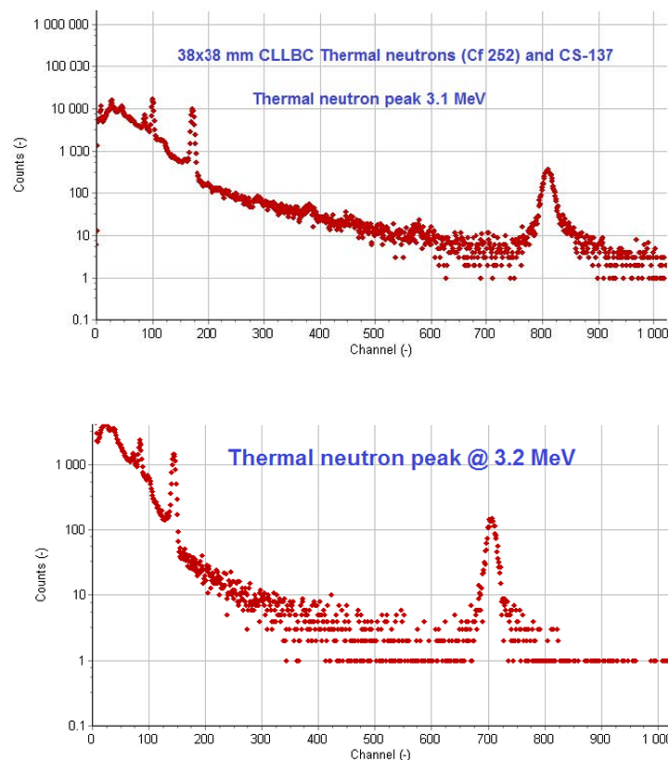


DUAL MODE SCINTILLATORS: CLLBC AND CLYC:CE

Blog Post

Berkeley Nucleonics Corporation offers two different types of dual-mode scintillators for gamma and neutron detection: CLLBC and CLYC: Ce materials. These detectors are a great solution to have one unit perform both gamma/neutron detection and pulse height discrimination (PSD). Both materials have a strong thermal neutron peak at 3.1-3.2 MeV where one can discriminate the energies. This neutron peak can be differentiated from any gamma-ray peak near the energy range. We offer these scintillation materials in a variety of sizes, coupled with photomultiplier tubes (PMTs) and voltage dividers.



Top: Thermal Neutron Peak CLLBC; Bottom: Thermal Neutron Peak CLYC: Ce

The energy resolution required for the research, and energy range measured influence which material is best for the application. For instance, CLLBC and CLYC: Ce have very low cross-sections for fast neutrons, and these materials work best when very good energy resolution for gamma radiation is required. If the user is looking to measure very fast neutrons we may recommend a different type of scintillator. One key difference between the materials is that CLLBC has a slightly better energy resolution of gamma energies compared to CLYC: Ce. However, depending on application

requirements this slight improvement in resolution may be unnecessary. Overall, energy resolution and energy range requirements are important aspects to consider.

Energy (keV)	Typical Resolution CLBC	Typical resolution CeBr3	Typical resolution NaI(Tl)
30 (129-I)	15 %	20 %	18 %
59.5 (241-Am)	10 %	13 %	10 %
122 (57-Co)	6.4%	8 %	8.5 %
662 (137-Cs)	3.2 %	4 %	7 %
1332 (60-Co)	2.3 %	3 %	5.5 %
2600 keV (Th-228)	1.8 %	2.5 %	4.0 %

Typical Resolution, "[CLBC Scintillators High Resolution Gamma / Neutron Detectors](#)"

We are open to a discussion about your equipment requirements and applications. If you have any questions about this post please let us know. Below are a few examples of applications with dual-mode scintillators.

Key Applications for CLLBC and CLYC:Ce

- Neutron Detection and Characterization
- Time of Flight Spectroscopy
- General Spectrometry
- Neutron Scattering Experiments