SCIONIX

Data sheet

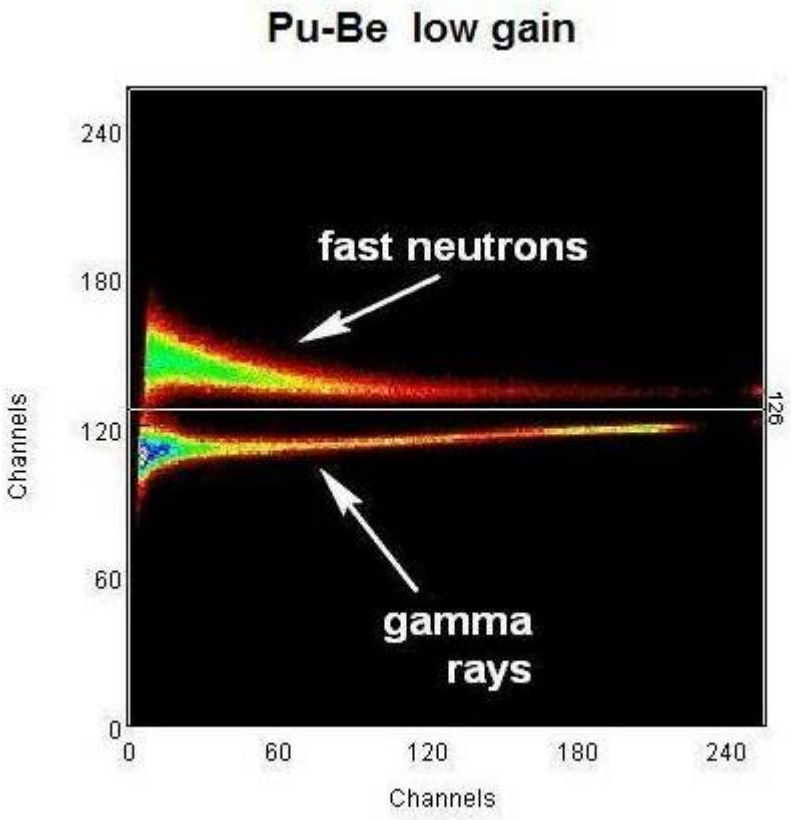
High flashpoint EJ-309 liquid scintillation detectors

High flashpoint EJ-309 liquid scintillator is an alternative to the commonly used EJ-301 (=NE213). EJ-309 has a flashpoint of 144° C and is not listed as dangerous goods material. It's Pulse Shape Discrimination (PSD) properties are just slightly inferior to EJ-301.

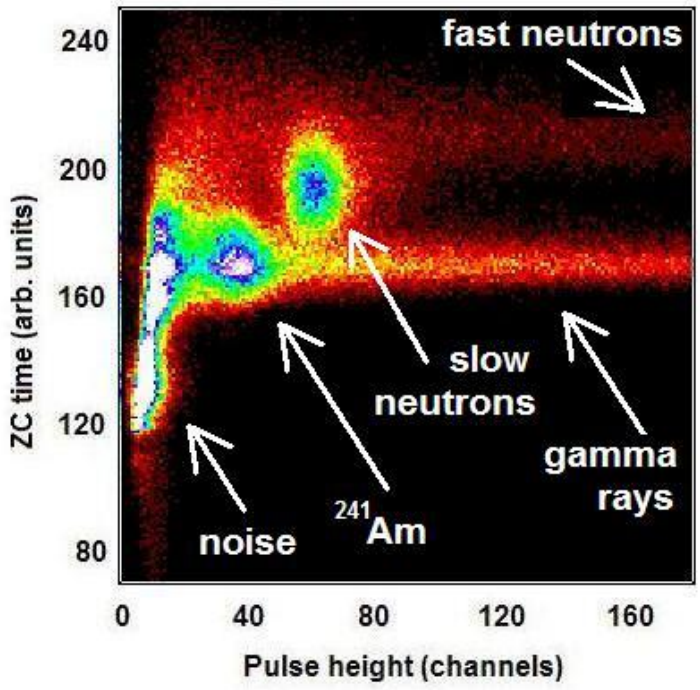
To increase the neutron sensitivity, EJ-309 can be doped with Boron up to a weight percent of 5% of natural boron. This material is called EJ309:B5.

EJ-309 can be encapsulated in a variety of geometries and can be read out with suitable PMT's to obtain the optimum timing and neutron gamma separation via PSD.

Properties	**EJ-309**	**EJ-309:B5**
Light output (rel. to Anthracene)	75 %	52 %
Photon yield / MeV electrons	11.500	approx. 8000
Maximum of emission wavelength	424 nm	424 nm
Density (15 ^{o}C)	0.964 g / cc	0.963 g / cc
H:C ratio	1.25	1.28
No. C atoms per cc	4.37. 10^{22}	4.13 10^{22}
No. H atoms per cc	5.46 .10^{22}	5.34 10^{22}
No. electrons per cc	3.17. 10^{23}	3.16 10^{23}
No of ^{10}B atoms per cc	----	5.34 . 10^{23}
Flash point	144° C	144° C
Decay time short component	Approx. 3.5 ns	Approx. 3.5 ns
Refractive index	1.57	1.57
Light attenuation coefficient	> 1 m	>1 m



2-dimensional scatterplot showing neutron / gamma separation in EJ-309



2-dimensional scatterplot showing neutron / gamma /X-ray separation in EJ-309:B5. The Boron related neutron capture peak is located at a significant higher gamma equivalent energy (100 keV) than in boron doped EJ-301 (60 keV)

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