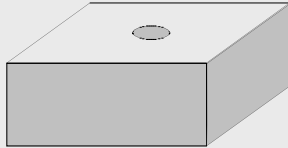


# Large Volume CdTe (CZT) Hemispheric Detectors

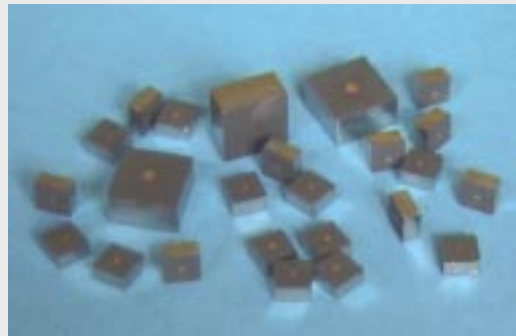


The progress achieved in the quality of the II-VI crystals offers new possibilities in the development of large volume gamma-ray detectors of hemispherical structure. Contrary to the conventional detectors, the electrode design creates in these devices a logarithmic electric field accelerating the collection of electrons and slowing down the speed of holes. As a consequence, these sensors work in the single charge collection mode.

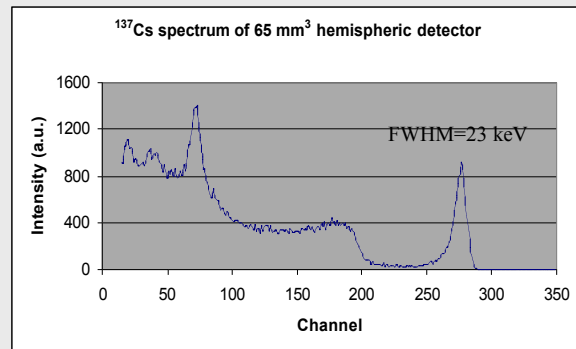
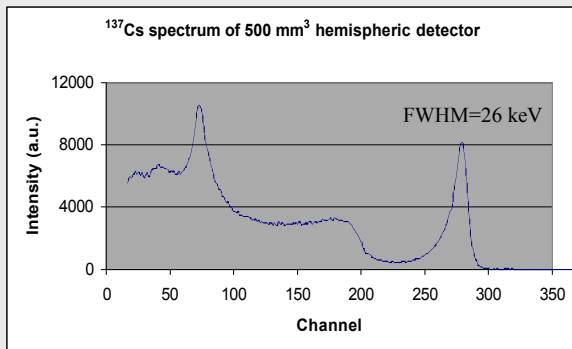
The optimal size and structure result from computer simulations, which make possible the stable operation of these detectors at high fields for long periods of time without any dielectric polarization.

## Main characteristics of hemispheric detectors :

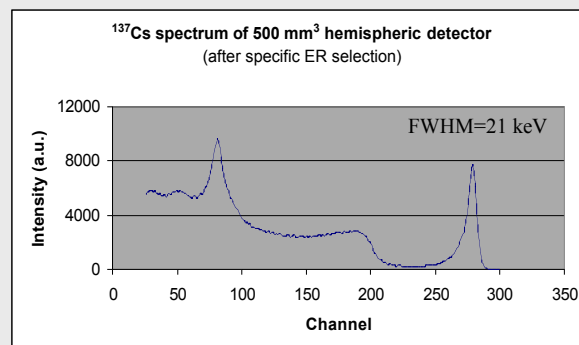
- active volume : from 65 to 500 mm<sup>3</sup>
- sensitive thickness : 2.5 or 5 mm
- bias voltage : 300 or 1200 V (or less)
- energy resolution at 662 keV (<sup>137</sup>Cs) : less than 30 keV
- peak to valley ratio : from 1.5 to 3



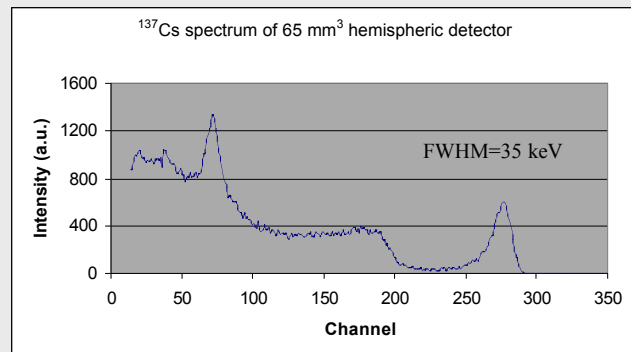
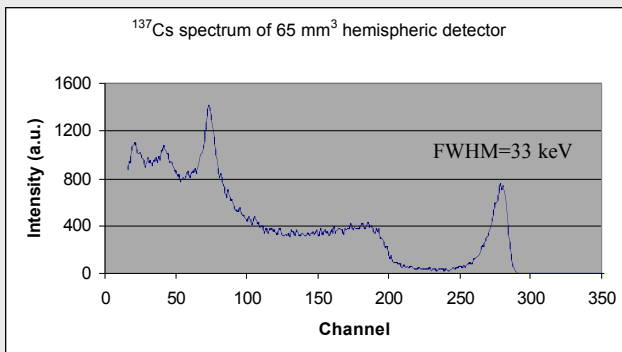
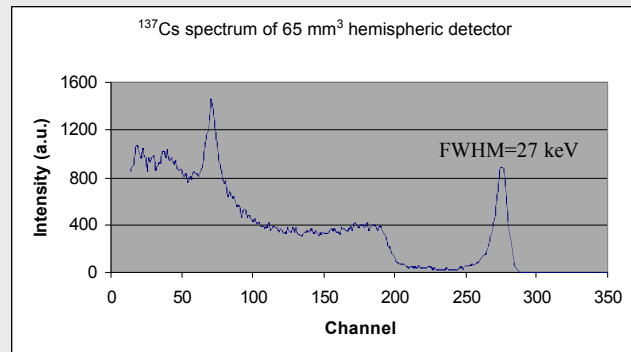
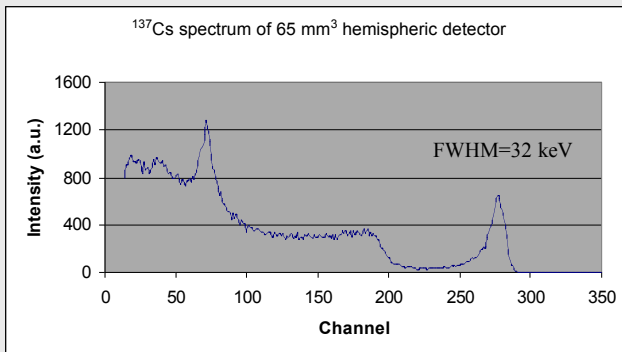
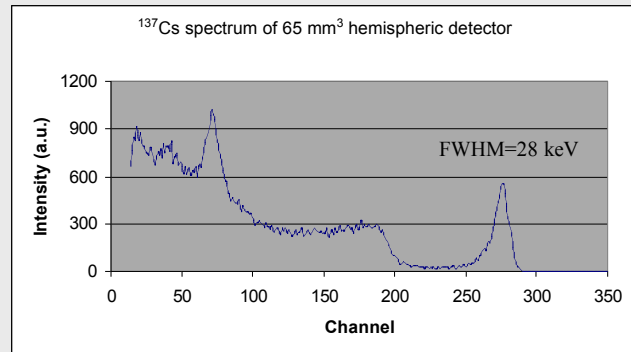
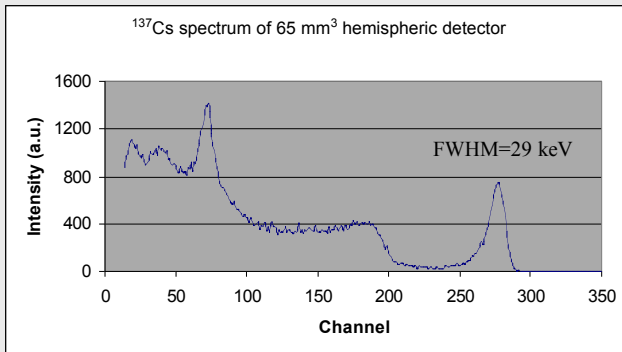
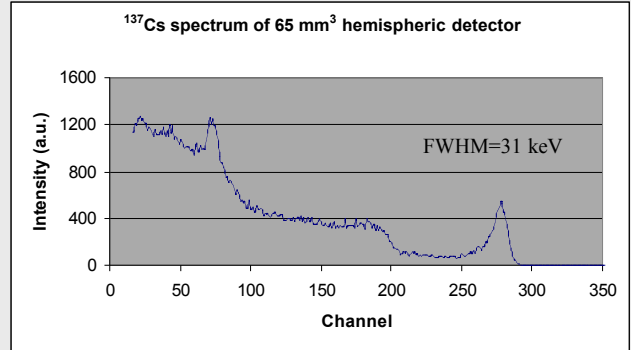
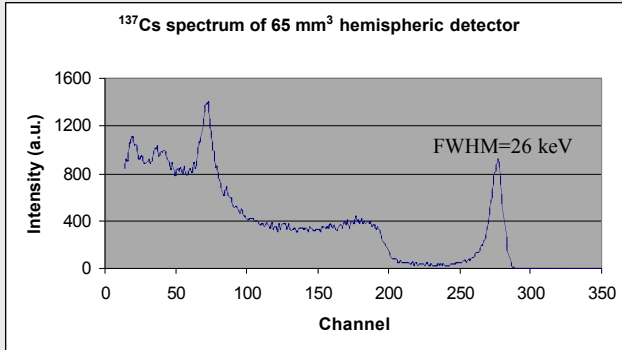
## Spectral characteristics (examples of the best detectors)



N. B. These results have been achieved with conventional ER electronics. By adding specific ER selection procedures even better performance can be obtained .



*Examples of the  $^{137}\text{Cs}$  spectra of some hemispheric detectors ( $5 \times 5 \times 2.5 \text{ mm}^3$ )*



*N.B. over thirty detectors available immediately.*

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