SOLID STATE DETECTOR

Solid-state detector, also called semiconductor Radiation Detection is a radiation detector in which a semiconductor material such as a silicon or germanium crystal constitutes the detecting medium.

P-n JUNCTION

One such device consists of a P-N junction across which a pulse of current develops when a particle of ionizing radiation traverses it.

CHARGE CARRIERS

The absorption of ionizing radiation generates pairs of charge carriers (electrons and electron-deficient sites called holes) in a block of semiconducting material.

GENERATION OF ELECTRIC PULSE

The migration of these carriers under the influence of a voltage maintained b.w the opposite faces of the block constitutes a pulse of current.

The pulses created in this way are amplified, recorded, and analyzed to determine the energy, number, or identity of the incident charged particles.

Date:

AGHA'S

EFFECT OF TEMPERATURE

The sensitivity of these detectors is increased by operating them at low temperatures - commonly that of liquid nitrogen ;-164°C (-263°F), which suppresses the random formation of charge carriers by thermal vibration