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radiation detector

Also contains definitions of: energy dispersive detector, nonselective detector, nonselective quantum counter, photochemical detector, photoelectric detector, selective detector, thermal detector

A device in which incident radiation produces a measurable effect. If this effect is a rise in temperature it is called a thermal detector. If it is a rise in pressure it is called a photoacoustic detector. In the case where an electrical signal is produced it is called a photoelectric detector. Photoelectric detectors can be classified as photo-emissive detectors and semiconductor detectors. Where the radiation produces a chemical reaction, it is termed a photochemical detector. A detector yielding an output signal that is independent of the wavelength of the radiation over a specific region is called a nonselective detector. Where it is wavelength specific it is a selective detector. A detector having a quantum efficiency independent of the wavelength is a nonselective quantum counter. Certain detectors are able to distinguish between different quantum energies. This property is described by the energy resolution ΔE and the energy resolving power $\frac{E}{\Delta E}$. These detectors are called energy dispersive detectors. In X-ray spectroscopy, the reciprocal $\frac{\Delta E}{E}$ is often used but this is discouraged.

Source:
PAC, 1995, *67*, 1745 *(Nomenclature, symbols, units and their usage in spectrochemical analysis-XI. Detection of radiation (IUPAC Recommendations 1995))* on page 1748
PAC, 1994, *66*, 2513 *(Nomenclature for radioanalytical chemistry (IUPAC Recommendations 1994))* on page 2518

