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# responsivity, *R*

**Also contains definitions of**: dark current, dark output, dark resistance, relative responsivity, spectral responsivity function, useful spectral range

*in detection of radiation*

Detector input can be e.g. radiant power, irradiation, radiant energy. It produces a measurable detector output which may be e.g. an electrical charge, an electrical current or potential or a change in pressure. The ratio of the detector output and the detector input is defined as the responsivity. It is given in e.g. ampere/watt, volt/watt. The responsivity is a special case of the general term sensitivity. Dark current is the term for the electrical output of a detector in the absence of input. This is a special case of the general term dark output. For photoconductive detectors the term dark resistance is used. If the responsivity is normalized with regard to that obtained from a reference radiation the resulting ratio is called relative responsivity. For measurements with monochromatic radiation at a given wavelength the term spectral responsivity $R(\lambda)$ is used. In some cases the relative spectral responsivity, where the spectral responsivity is normalized with respect to the responsivity at some given wavelength, is used. The dependence of the spectral responsivity on the wavelength is described by the spectral responsivity function. The useful spectral range of the detector should be given as the wavelength range where the relative responsivity does not fall below a specified value.

***Source:***

PAC, 1995, *67*, 1745 *(Nomenclature, symbols, units and their usage in spectrochemical analysis-XI. Detection of radiation (IUPAC Recommendations 1995))* on page 1749

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