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DEVELOPMENT OF A COMPUTER PROGRAM FOR EPR DOSIMETRY

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The quantification of free radicals in irradiated paramagnetic substances based on Electron Paramagnetic Resonance - EPR analysis is a very well known method for high level dosimetry. Alanine/EPR dosimeters are very simple and have been applied as transfer and standardization system for high dose dosimetry. Accidental doses can be derived from paramagnetic materials found close to the victims, e.g. sugar, eggshells. The accurate EPR dosimetry requires adequate equipment and trained staff but the base of the method is the correct interpretation of EPR signal. The usual method for alanine/EPR dosimeter evaluation is to measure the peak-to-peak height of the central element of the spectrum and make its association with the calibration curve. However, for low doses the relation signal-to-noise affects the baseline and the distortions can complicate the correct spectrum analysis. This paper will describe the work being carried out at Ipen towards the establishment of a computer system for EPR spectrum analysis for dosimetry purposes. The software that is being developed will congregate the main techniques of data analysis of EPR spectrum and the common procedures used in the dosimetry laboratories for high doses evaluation. The standardization of the procedures will allow obtain results of better quality, with enhanced precision and accuracy.

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