TRAP DEPTH ESTIMATION OF THE 225 OC THERMOLUMINESCENCE MAXIMUM OF NATURAL TRIDYMITE USING INITIAL RISE AND VARIOUS HEATING RATE METHODS

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The aim of this study is to calculate the thermoluminescence kinetic parameters of beta irradiated natural tridymite mineral which has a complex multitrap system. The glow curve corresponding to 2.4 Gy shows five maxima peaked respectively at 90, 126 oC, and three less intense overlapped maxima at higher temperatures, which are 187, 225 and 320 oC. The wideone at 225 oC is chosen due to its highest stability for dosimetric purposes (dating and/or retrospective luminescence dosimetry) as appreciated in the reusability tests (i.e. 5 successive cycles of readout till 500 oC and given dose of 1.2 Gy). The activation energy (Ea) value, which is found to be 1.5 (2) eV, has been estimated by means of both initial rise (IR) and various heating rate (VHR, between 2.4 and 6 oC/s) techniques. The Tmax-Tstop method (between 150 and 270 oC) indicates the presence of, at least, two groups of components centered at 200 and 260 oC associated with a continuous trap distribution system.

TRUE COINCIDENCE SUMMING CORRECTION FOR 60CO WITH EGS4 SYSTEM

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True coincidence summing arises as a problem in gamma-ray spectroscopy for the radionuclides which emit multiple gamma-rays in cascade. Therefore, correction factors have to be determined in order to account for this problem. Beside s experimental and analytical determination of the correction factors, Monte Carlo (MC) simulation techniqucs arc also as an altcrnativc way to perform that job. In the current study, a code has been written for true coincidence summing correction factor for the radionuclide 60Co. Although only one radionuclide was considered here, the method can be used to determine correction factor for other radionuclides.