CHARACTERIZATION OF DOSIMETERS FOR BETA RADIATION BEAMS IN TERMS OF THE PERSONAL DOSE EQUIVALENT

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A thermoluminescent material consists of a mass of about 1 to 100mg of a crystalline dielectric material containing suitable activators. These activators, which may be present in extremely small amounts, create two types of imperfections in the crystalline lattice:traps for electrons and centers of luminescence.The ionizing radiation, when interacting with the electrons, gives energy to the same ones, that are trapped by the traps. If the material is subjected to a heating the electrons trapped in the traps are released, causing them to lose energy in the centers of luminescence. The energy difference between these two levels is emitted through a photon in the range of visible light of the order of some eV. Thus, in this research two end dosimeters, one consisting of a Harshaw EXT-RAD ring holder and CaSO4: D graphite thermoluminescent crystal and the other of a Velcro ring and TLF crystal of LiF: Mg, Ti where they were characterized and calibrated to measure the personal dose equivalent, Hp (d), in the depth of 0.07 mm, in bundles of beta radiation generated by a source of 90Sr + 90Y and for the characterization of the dosimeter performance tests were performed such as: limit angular dependence and linearity to verify the best performance.