AbstractID: 9222 Title: Energy Dependence of a TLD System for Characterizing Low Energy Brachytherapy Sources

A new LiF TLD system has been developed for the dosimetry of low energy brachytherapy sources. This detector system will allow measurements for the determination of dose distribution to be performed directly in liquid water, thus minimizing the complications introduced by the customary use of Solid Water™ as a phantom material. The energy dependence for photon energies in the range of 20 keV to 30 keV relative to ^{60}Co gamma rays was determined using a calculation model based on Burlin's theory for intermediate cavity sizes. A Monte Carlo N-Particle Transport Code (MCNP) was used to verify the experimental results from the LiF TLD measurements. The results are compared with experimental and theoretical results from other authors. This low-energy radiation study provides a better understanding of the dosimetry system behavior and also enables a more efficient calibration relative to ^{60}Co gammas.

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