

TLD Dosimetry for a New Model of ^{125}I Seed

As the efficacy of brachytherapy prostate treatment is becoming realized, new models of ^{125}I seeds are being introduced. In this paper we present TLD Dosimetry in solid water phantom for a new design of ^{125}I seed (Model I25.S06) from UroMed/Bebig. TLD cubes (LiF TLD-100) with dimension 1 x 1 x 1mm were irradiated at various distances from the seed at angles ranging from 0° to 90° in 10° increments. Sensitivity calibration of the TLD's was achieved by irradiation with a Cobalt Teletherapy unit between exposures of ^{125}I . Concurrent with the ^{125}I seed exposures, a group of TLD's was also exposed to ^{60}Co as controls. Bicon Model 5500 Automatic TLD Reader was used to read the cubes. Dose rates per unit air kerma strength were determined based on the NIST traceable standard. Dose data are presented in TG43 format as a function of distance and angle. Values for $F(r,\theta)$, $g(r)$, and the anisotropy constant are obtained for use in treatment planning computer systems. We find that the relative dose distributions of Model I25.S06 are similar to Model 6702. Agreement with Monte Carlo results is discussed. (This work is financially supported by UroMed/ Bebig.)