

# Pengaruh perubahan energi terhadap respon dosis Thermoluminesensi Dosimeter (TLD) menggunakan simulasi Monte Carlo = Effect of change in the energy of the dose response Thermoluminescence Dosimetry (TLD) using Monte Carlo simulation

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## Abstrak

Penelitian yang bertujuan untuk mengetahui pengaruh energi 10 keV hingga 1500 keV terhadap nilai respon dosis thermoluminescence dosimeter (TLD) LiF : Mg Ti menggunakan simulasi user kode Monte Carlo yaitu DOSXYZnrc telah dilakukan. Pemodelan dilakukan dengan meletakkan TLD di medium udara dengan jarak 100 cm dari sumber radiasi dan luas lapangan radiasi 30 cm x 30 cm dalam simulasi DOSXYZnrc. Dalam simulasi sumber dianggap sebagai berkas paralel dan tegak lurus terhadap permukaan detektor. Pada pengukuran ini, nilai hamburan nilainya kecil sehingga dapat dianggap diabaikan dan tidak mempengaruhi dosis pada TLD 100. Hasil simulasi menunjukkan bahwa respon dosis TLD sangat tergantung pada variasi energi berkas, nomor atom efektif ( $Z_{eff}$ ), and komposisi material TLD. Selain itu, kemampuan absorpsi TLD juga dipengaruhi oleh ketebalannya.

.....The study of the influence energy in the range of 10 KeV to 1500 KeV to a dose response of thermoluminescence dosimeter (TLD) 100 LiF : Mg Ti. The study was done using Monte Carlo Simulation with DOSXYZnrc code has been done. The TLD was simulated took placed in the air medium with source to object distance of 100 cm from the radiation source and filed size of 30 cm x 30 cm. The geometry of radiation sources was assumed as parallel beams and perpendicular with detector surface. In the calaculation, the the scattering in air is very small so it was neglected and did not affect the dose to the TLD 100. The simulation results indicated that the TLD's response depend on the energy of beams, effective atomic number and compound composition of TLD. On the other hand, the absorption of TLD is also affected by its thickness.