Production dosimeter LiF: Mg, Ti and comparison its responses with dosimeter LiF: Mg, Ti (TLD-100) in Harshaw company against of gamma rays

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(Received 13 April 2009 ; in final form 24 October 2009)

Abstract
Thermoluminescence dosimeters are small tablets used with 3.2*3.2*0.9 mm³ for measurement of received dose from radioactive various beams. The most common dosimeter is TLD-100 which is lithium-fluoride family and this dosimeter contain magnesium impurities. In this study, first lithium-flouride powder was mixed with titanium and controlled atmosphere samples were heated. After measuring of samples density and hardness, their glow curves were drawn and microscopic pictures of produced samples were provided. Of course, the reader should know that the best press pressure, the best range of temperature heating and the best range of samples heating were determined in 6-8 (ton/cm²), 775-800 °C and 15-20 h, respectively [1]. Then, the response of produced TLD-100 under radiation of gamma sources, ⁶⁰Co, was measured in 500 mSv rate and obtained values were compared with obtained values by Harshaw produced samples. Dosimetry characteristics of produced samples was evaluated according to ASTM E 668-00, IEC-ISO 1066 standards. The results of comparisons indicate good agreements between produced sample and Harshaw sample.

Keywords: dosimetry, thermoluminescence, Glowcurve, Harshaw, gammaray, neutron, LiF

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