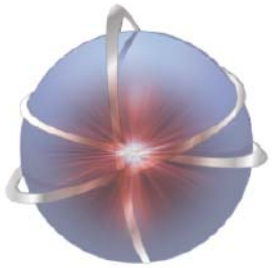
TESNAT 2018

20-22 April 2018 Akdeniz University, Antalya, Turkey

4th International Conference on Theoretical and Experimental Studies in Nuclear Applications and Technology



Abstract Book

Editors
Eyyup TEL, Abdullah AYDIN, İsmail Hakkı SARPÜN

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Thermoluminescence heating rate behaviour of $Zn(BO_2)2:0.05Dy3+$

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$Zn(BO_2)_2$:0.05Dy3+ phosphor prepared by using the nitric acid method was examined via thermoluminescence (TL) technic. The TL glow curves of the sample exposed to beta ray in the dose range of 1-80 Gy show a TL maximum at c.a. 180°C (preheated at 140°C and measured at a constant heating rate (HR) value: 2°C s^{-1}, by using Lexsyg Smart TL reader). The linearity was noted and TL signal saturation has not been observed up to 80 Gy. Furthermore TL glow curves of $Zn(BO_2)_2$:0.05Dy3+ phosphor exposed to 20 Gy beta dose were studied using different HRs in the range of 0.5–10°C s^{-1}. While HR value increases: (i) the temperature value at maximum TL intensity (Tm) shifts to higher temperature values, (ii) maximum TL intensity value of the glow peak decreases, (iii) the integrated peak area of the glow curve decreases, and (iv) full width at half maximum (FWHM) increases, as presence evidences of temperature lag effect and thermal quenching phenomenon.

Keywords: Thermoluminescence, Zinc borate, dosimetry, heating rate