

**International Congress in Honour of**

**Professor Ravi P. Agarwal**

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**Uludag University, Bursa–Turkey**

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## 185 Determination of Thermoluminescence Kinetic Parameters of $\text{ZnB}_2\text{O}_4$ : La Phosphors

Nil Kucuk, A.Halit Gozel, Mustafa Topaksu and Mehmet Yüksel

Thermoluminescence (TL) glow curves of 1%, 2%, 3% and 4%  $\text{ZnB}_2\text{O}_4$ : La phosphors synthesized by nitric acid method were obtained by irradiation at the dose range of 143 mGy - 60 Gy with  $^{90}\text{Sr}/^{90}\text{Y}$  beta source, which has 40 mCi activity, included in the Risø TL/OSL DA-20 reader system. TL glow curves were recorded after pre-heating process at 140 °C and then heating up to 450 °C in nitrogen atmosphere at a constant heating rate of 5 °C/s. In this study, with the help of glow curve readings, kinetic parameters of the main TL glow peaks of  $\text{ZnB}_2\text{O}_4$ : La phosphors (i.e. activation energies and frequency factors) were determined and evaluated by the method of Computerized Glow Curve Deconvolution (*CGCD*), Peak Shape (*PS*) method and Initial Rise (*IR*) method. In conclusion, kinetic parameters found in this study by the methods applied to  $\text{ZnB}_2\text{O}_4$ : La phosphors were consistent with each other.

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