

FLUORESCENCE OF Tm DOPED $\text{Li}_2\text{B}_4\text{O}_7$ GLASS

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Lithium tetraborate ($\text{Li}_2\text{B}_4\text{O}_7$) is mainly used in dosimetry as thermoluminescent material. This study is an overview of optical studies made with Tm doped $\text{Li}_2\text{B}_4\text{O}_7$ in glassy state. An energy level diagram of Tm^{3+} in $\text{Li}_2\text{B}_4\text{O}_7$ was obtained from the fluorescent spectra. Optical absorption measurements, between 2850 nm and 300 nm, showed bands due to the presence of $\text{Tm}^{3+}(4f^{12})$ in the glassy matrix because of its characteristic electronic transitions. Optical intensities determined at room temperature, for 455 nm absorption wavelength after different ^{60}Co gamma rays irradiation doses, show the reduction of Tm^{3+} to the Tm^{2+} state. The reconversion from Tm^{2+} to the Tm^{3+} states is shown by the fluorescence emission intensity at 455 nm due to a post-irradiation heating of the samples.

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