

# Turkish Journal of Physics

Turkish Journal

of

Physics

The Investigation of the Thermoluminescence Emission Bands of LiF:Mg,Ti (TLD-100) by a Simple Developed Model

A. N. YAZICI, Z. ÖZTÜRK, M. BEDİR  
University of Gaziantep, Faculty of Engineering,  
Department of Engineering Physics  
27310 Gaziantep-TURKEY

 [Keywords](#)  
[Authors](#)



[phys@tubitak.gov.tr](mailto:phys@tubitak.gov.tr)

[Scientific Journals Home](#)  
[Page](#)

**Abstract:** In this study, a new simple model based on the classical treatment of lattice vibrations and the Franck-Condon principle is developed to describe the shape of thermoluminescence (TL) emission bands of crystalline solids. According to developed model, shape of the emission band has a Gaussian form and depends on just two physical parameters: peak energy  $E_0$  and broadening of emission spectra  $U$ . In order to demonstrate the success of the developed model, the emission spectra of dosimetric material LiF:Mg,Ti (TLD-100) was also measured. Then, a computerised best-fit program including the developed model was used to analyse the emission spectra. The number of individual bands and their kinetic parameters were also obtained by this program. Two emission bands were observed for all glow peaks with peak energies at around 3.0 eV and 2.75 eV.

**Key Words:** Thermoluminescence, LiF.Mg,Ti, TLD-100, Emission Band

---

Turk. J. Phys., **25**, (2001), 333-343.

Full text: [pdf](#)

Other articles published in the same issue: [Turk. J. Phys.,vol.25,iss.4.](#)