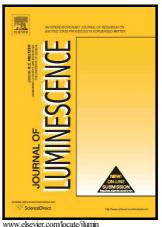
Author's Accepted Manuscript

Dependence of the peak shift, peak height and FWHM of thermoluminescence peaks on the heating rate and trap parameters

Mufeed Maghrabi



www.eisevier.com/locate/jiumii

PII: S0022-2313(17)32035-5

DOI: https://doi.org/10.1016/j.jlumin.2018.02.013

Reference: LUMIN15360

To appear in: Journal of Luminescence

Received date: 27 November 2017 Revised date: 2 February 2018 Accepted date: 4 February 2018

Cite this article as: Mufeed Maghrabi, Dependence of the peak shift, peak height and FWHM of thermoluminescence peaks on the heating rate and trap p a r a m e t e r s , *Journal of Luminescence*, https://doi.org/10.1016/j.jlumin.2018.02.013

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Dependence of the peak shift, peak height and FWHM of thermoluminescence peaks on the heating rate and trap parameters.

Mufeed Maghrabi

Physics Department, Hashemite University, P.O. Box 150459, Zarqa 13115, Jordan.

Email: muf.mug@hu.edu.jo

Abstract

The temperature shift of the maximum TL intensity towards higher temperatures with increasing heating rate is a well known phenomenon. The explanation of such phenomenon is qualitatively understandable. In the present work we predict the temperature shift of the peak intensity quantitatively by analyzing synthetic general-order glow peaks. The obtained expression correlates the temperature shift with the heating rate and the trap parameters. Similar expressions to predict the peak height and the full width at half maximum (FWHM) at higher heating rates are also given. The errors involved in applying these expressions are within the expected experimental errors. The obtained expressions resulted in two new versions of the existing various heating rates methods to evaluate the activation energy which can be used irrespective of the order of kinetics. One of these methods was applied to the TL data of LiF:Mg,Ti and Al₂O₃:C and shows excellent agreement with the published values for the activation energy. In addition, a new expression to correct for the temperature lag was given which shows little improvement in predicting the correct peak temperature when compared with the existing one.

Keywords: Glow peak shift; Heating rate; Activation energy; Temperature lag.

Download English Version:

https://daneshyari.com/en/article/7840085

Download Persian Version:

https://daneshyari.com/article/7840085

<u>Daneshyari.com</u>