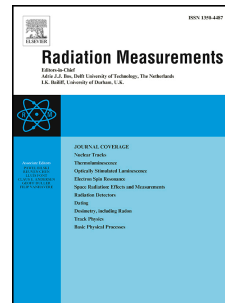


Accepted Manuscript

On the equivalence of natural and laboratory growth curves in luminescence dating -
The effect of deep traps and luminescence centres

Natalia Kijek, Alicja Chruścińska



PII: S1350-4487(17)30353-0

DOI: [10.1016/j.radmeas.2017.05.014](https://doi.org/10.1016/j.radmeas.2017.05.014)

Reference: RM 5797

To appear in: *Radiation Measurements*

Received Date: 15 September 2016

Revised Date: 9 May 2017

Accepted Date: 22 May 2017

Please cite this article as: Kijek, N., Chruścińska, A., On the equivalence of natural and laboratory growth curves in luminescence dating - The effect of deep traps and luminescence centres, *Radiation Measurements* (2017), doi: 10.1016/j.radmeas.2017.05.014.

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 proof before it is published in its final 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.

**On the equivalence of natural and laboratory growth curves in luminescence dating
- the effect of deep traps and luminescence centres**

Natalia Kijek*, Alicja Chruścińska

Institute of Physics, Faculty of Physics, Astronomy and Informatics, Nicolaus Copernicus University,
Grudziadzka 5, Torun, Poland

*e-mail: natalia@fizyka.umk.pl

Abstract

OSL dating is a well-established method of determining the age of quaternary sediments. It has been tested for years by the comparison of OSL ages with results obtained independently using other methods. Reports concerning the cases when ages are over- or under-estimated appear from time to time and are related to discrepancies between the natural and laboratory growth curves. The consistency of both curves is the basic assumption of the OSL method. The experimental verification of this assumption is tedious and always limited to an individual sample, so suitable simulations of the OSL process seems to be a reasonable way of investigating this problem. Here, an OSL model including four electron traps and two luminescence centres is used for testing the significance of the presence of different luminescence centres for growth curve consistency. Growth curve differences are related to the concentration and filling of the deepest traps and not to the luminescence centres. The particular nature of these differences can be caused by the weak optical sensitivity of the deepest traps. None of the configurations of the model tested here lead to discrepancies between the saturation levels of the natural and laboratory growth curves, which were reported earlier in OSL dating practice.

Download English Version:

<https://daneshyari.com/en/article/8250472>

Download Persian Version:

<https://daneshyari.com/article/8250472>

[Daneshyari.com](https://daneshyari.com)