



FOURTH INTERNATIONAL CONFERENCE ON RADIATION  
AND APPLICATIONS IN VARIOUS FIELDS OF RESEARCH

May 23 - 27, 2016 | Niš | Serbia | [rad-conference.org](http://rad-conference.org)

# BOOK OF ABSTRACTS



**PUBLISHER:** University of Niš, Faculty of Electronic Engineering  
P.O.Box 73, 18000 Niš, Serbia  
www.elfak.ni.ac.rs

**FOR THE PUBLISHER:** Prof. Dr. Dragan Mančić

**EDITOR:** Prof. Dr. Goran Ristić

**COVER DESIGN:** Vladan Nikolić, PhD

**TECHNICAL EDITING:** Vladan Nikolić, PhD and Sasa Trenčić, MA

**PROOF-READING:** Saša Trenčić, MA and Mila Aleksov, MA

**PRINTED BY:** Sven, Niš

**PRINT RUN:** 50 copies

*The Fourth International Conference on Radiation and Applications in Various Fields of Research (RAD 2016)* was financially supported by:

- Central European Initiative (CEI)
- Ministry of Education, Science and Technological Development of the Republic of Serbia

**ISBN: 978-86-6125-160-3**



## THERMOLUMINESCENCE PROPERTIES OF ANHYDROUS SODIUM SULFATE

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In this study, thermoluminescence (TL) properties of anhydrous sodium sulfate ( $\text{Na}_2\text{SO}_4$ ) were studied. These TL properties include the dose response of  $\text{Na}_2\text{SO}_4$  for beta ( $\beta$ ) irradiation, reusability, TL kinetic parameters, and short-term fading. All TL measurements were carried out on three aliquots of  $40 \pm 0.15$  mg samples by using a Risø TL/OSL DA-20 reader. Irradiation was performed with a  $^{90}\text{Sr}/^{90}\text{Y}$   $\beta$  source, which has 40 mCi activity (dose rate: 6.689 Gy/s). TL glow curves were recorded up to 250 °C in nitrogen atmosphere at a constant heating rate of 5 °C/s. The  $\text{Na}_2\text{SO}_4$  samples exhibit a prominent glow peak at 100 °C along with a shouldered peak at 150 °C. It was observed that the intensities of these low temperature TL peaks increase linearly with the  $\beta$ -dose. The activation energy (E), order of kinetics (b), and frequency factor (s) of the samples were determined using the computerized glow curve deconvolution (CGCD) method after being exposed in different  $\beta$  doses.

**Key words:** Thermoluminescence, sodium sulfate, dose response, reusability, fading.

**Acknowledgement:** This work was supported by Research Fund of the Çukurova University (Project Number: FED-2016-5626). All authors would like to thank Research Fund of the Çukurova University for financial support.