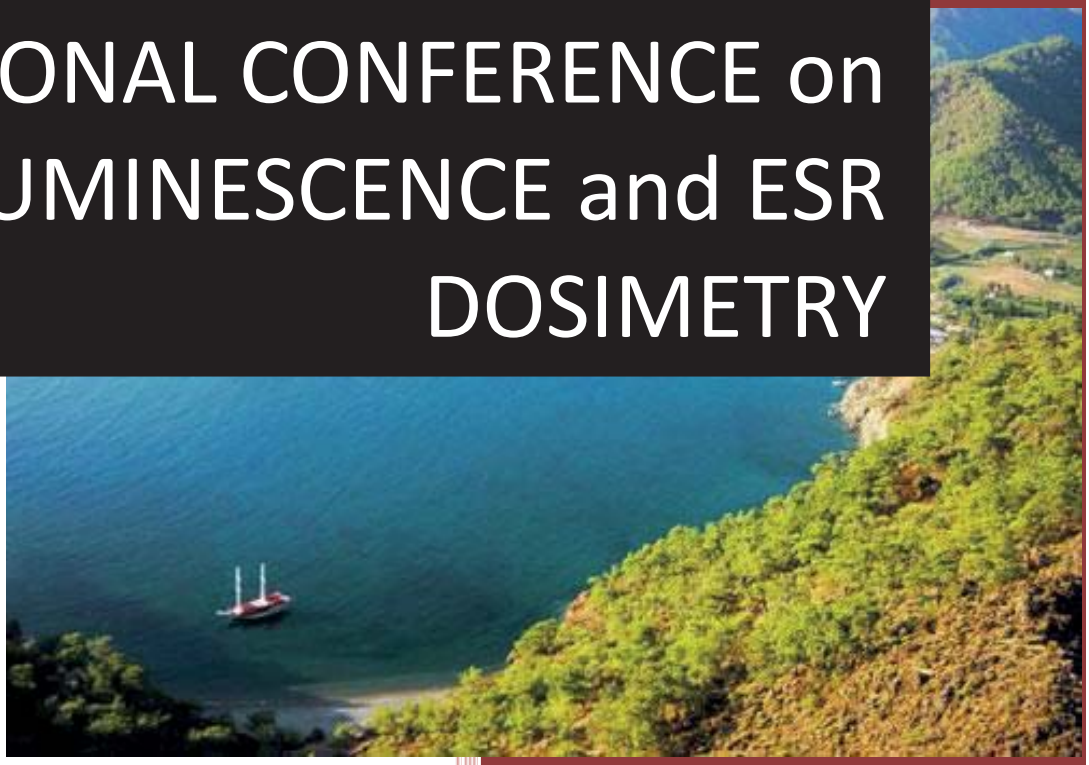
2015

LUMIDOZ 9: THE 9TH INTERNATIONAL CONFERENCE on LUMINESCENCE and ESR DOSIMETRY



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Book of Abstracts

LUMIDOZ 9: THE 9TH INTERNATIONAL CONFERENCE on LUMINESCENCE and ESR DOSIMETRY

2-4 September 2015

NUBA - AKDENIZ UNIVERSITY

ANTALYA / TURKEY

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Dosimetric Characteristics of Anhydrous Borax

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In this study, the dosimetric characteristics of anhydrous borax (Etibor-68, $Na_2B_4O_7$) were investigated by using thermoluminescence (TL) technique. The first phase of the study, anhydrous borax samples were characterized by using thermogravimetric (TG/DTA), x-ray diffraction (XRD), x-ray fluorescence (XRF) and scanning electron microscope (SEM)analysis. In the second phase of the study, the beta and photon (x-ray) dose response, reusability, fading properties, the effect of particle size to the TL glow peaks, effects of the high dose on TL sensitivity and various heating rate effect experiments of the samples were performed. TL glow curves of samples were recorded after pre-heating process at 200°C and then heated from room temperature to 600°C in nitrogen atmosphere at a constant heating rate of 2°C/s. TL measurements were showed a main peak at 230ºC and a shoulder peak at around 350ºC. In the light of this study, it was observed that the anhydrous borax samples have a linear dose response from 1 Gy to 200 Gy and then superlinear response.

Keywords: Thermoluminescence, anhydrous borax, $Na_2B_4O_7$, Etibor-68, Dose response.