THE EFFECTS OF ANNEALING ON THE THERMOLUMINESCENCE GLOW PEAKS OF THE NATURAL MUSCOVITE MINERAL

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The annealing effect on thermoluminescence (TL) glow peaks of natural white muscovite mineral has been investigated. Muscovite is a rock-forming silicate mineral within the mica group and there is a growing interest in the study of the TL characteristics of it due to its dosimetric potential. In this study, the muscovite mineral was annealed at the temperatures ranging from 100 °C to 600 °C with an increment of 100 °C for 30 min., 1 h and 2 h for TL measurements. All annealing treatments were performed with a specially designed microprocessor-controlled electrical oven, which is able to control the temperature within ±1 °C. The irradiations at room temperature (RT) were carried out with the β-rays from a calibrated $^{90}$Sr–$^{90}$Y source (≈0.115 Gy/s) after each annealing process. The muscovite samples exposed to a beta dose of 207 Gy were readout with a linear heating rate of 2 °C/s from RT to 400 °C in N₂ atmosphere by using the Lexsyg smart luminescence measuring system. With the comparison of the TL glow peaks of both un-annealed and annealed samples irradiated with the same beta dose, the effects of annealing temperature and time on TL response were observed.

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