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LUMINESCENCE STUDY OF NEODYMIUM-DOPED CALCIUM SULFATE

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Different rare earth elements (REE) doped calcium sulfate ($CaSO_4$) based dosimeters are being used in personnel dosimetry, such as $CaSO_4$:Dy and $CaSO_4$:Tm. In this paper, optically stimulated luminescence (OSL) characteristics of $CaSO_4$:Nd crystalline prepared by the precipitation method was studied. The structure of the produced $CaSO_4$:Nd powder was characterized using the SEM-EDX method. The effect of the heating rate (HR), preheat and reusability properties were investigated after beta (β) irradiation. Furthermore, thermoluminescence (TL) glow curves were recorded and TL glow peaks of $CaSO_4$:Nd were determined after the preheat process at 90°C.

Key words: Optically-stimulated luminescence, doped calcium sulfate, REE, thermoluminescence, preheat