



The effect of dose on thermoluminescence of $\text{ScPO}_4:\text{Eu}^{3+}$ ceramic.

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Depending on the dose of ionizing radiation, $\text{ScPO}_4:0.1\%\text{Eu}^{3+}$ sintered ceramic presents significantly different thermoluminescent properties. Despite a thermoluminescent peak around 90 °C which appears upon small doses (up to tens of mGy) it also shows strong thermoluminescence at 240 °C but only after exposure to higher doses. In both cases, the thermoluminescence is generated by Eu^{3+} ions, which also serve as electron traps. Recognition of the relevant hole traps responsible for the thermoluminescent peaks needs more comprehensive research using such tools as advanced EPR spectroscopy at different temperatures. At room temperature, the thermoluminescence peak at 240 °C is very resistant to fading hardly showing any loss of intensity within 24 h. The peak at 90 °C fades continuously at ambient conditions and after 24 h its intensity drops to about 10% of its original strength. Hence, this component is responsible for the hours-lasting persistent luminescence of the $\text{ScPO}_4:0.1\%\text{Eu}^{3+}$ ceramic.

Słowa kluczowe

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