Luminescence properties of Ce-activated YAG optical ceramic scintillator materials.

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Streszczenie

Scintillation and luminescence characteristics of a highly dense transparent YAG: Ce-ceramic are reported and compared to those of a single crystal. When excited with gamma-rays both types of materials display the same dominant ≈85 ns decay, but the ceramic also shows a new rapid component of ≈20 ns that is completely absent in the single crystal. The scintillation output from the ceramic reaches about 50% of that from the single crystal, having been diminished by unusual loss processes caused by the deformed lattice at the grain boundary interfaces. A phenomenological model involving distortion of the band structure is proposed to explain the results of kinetic measurements.

Słowa kluczowe

Scintillator, Ceramic, YAG: Ce, Energy transfer, Microstructure

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