Intrinsic and Ce^{3+}-related luminescence of YAG and YAG:Ce single crystals, single crystalline films and nanopowders.

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A comparative analysis of the luminescent properties of YAG and YAG:Ce nanopowders (NP) in comparison with single crystalline film (SCF) and single crystal (SC) analogues was performed under excitation by a pulsed synchrotron and X-ray radiation. It was shown that the natural defects concentration in NP was between the SC with a large (~0.18–0.19 at.%) concentration of Y_{Al} antisite defects (AD) and SCF of these garnets where Y_{Al} AD were completely absent. At the same time, Ce^{3+} doped YAG NP showed luminescent properties close to those of YAG:Ce SCF.

Słowa kluczowe

Nanopowders, Single crystalline films, Single crystals, Luminescence

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