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Luminescence of β -Ga₂O₃ Nanofoms Obtained by Oxidation of GaSe Doped with Eu

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The GaSe single crystals were doped with Eu in the process of their synthesis and growth. The oxide of β -Ga₂O₃ doped with Eu in the form of massive nanowires was obtained by thermal treatment (TT) in the atmosphere of GaSe single crystals doped with 1.0 at.% and 3.0 at.% of Eu. The crystalline structure, surface morphology and photoluminescence spectra of GaSe:Eu and β -Ga₂O₃:Eu single crystals were studied. The Photoluminescence (FL) spectrum of GaSe doped with 1.0 at.% of Eu at room temperature is formed as a result of transitions of ⁵D₀ -> ⁷F₁ to Eu³⁺ ion and as a result of radiation annihilation of n = 1 excitons in GaSe. The FL spectra of Ga₂O₃:Eu was interpreted on the basis of the energy level diagram of electrons in Eu³⁺ ion.