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Sprincean V., Untila D., Chirita A., Evtodiev I., Caraman I. (2020) Luminescence of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Nanoforms Obtained by Oxidation of GaSe Doped with Eu. In: Tiginyanu I., Sontea V., Railean S. (eds) 4th International Conference on Nanotechnologies and Biomedical Engineering. ICNBME 2019. IFMBE Proceedings, vol 77. Springer, Cham. [https://doi.org/10.1007/978-3-030-31866-6\\_49](https://doi.org/10.1007/978-3-030-31866-6_49)

The GaSe single crystals were doped with Eu in the process of their synthesis and growth. The oxide of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> 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 and 3.0 at.% of Eu. The crystalline structure, surface morphology and photoluminescence spectra of GaSe:Eu and  $\beta$ -Ga<sub>2</sub>O<sub>3</sub>: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  $^5D_0 \rightarrow ^7F_1$  to Eu<sup>3+</sup> ion and as a result of radiation annihilation of n = 1 excitons in GaSe. The FL spectra of Ga<sub>2</sub>O<sub>3</sub>:Eu was interpreted on the basis of the energy level diagram of electrons in Eu<sup>3+</sup> ion.