

Influence of the structural perfection of sapphire on the optical characteristics of the shell of a pulsed discharge lamp

S. V. Gavrish, V. V. Loginov, S. V. Puchnina, and R. M. Ushakov

Scientific and Production Enterprise "Melitta", Ltd
16/10 Miklukho-Maklaya st., Moscow, 117997, Russia
E-mail: svgavr@list.ru

Received July 07, 2022

The paper presents the results of studies of the influence on the optical transmission of defects in the structure of a sapphire tube grown by the method of A.V. Stepanov, changes in the transparency of a single crystal after mechanical surface treatment and ultraviolet and radiation exposure.

Keywords: sapphire, corundum, shell, pulsed discharge lamp, optical transmission, structural defects, ultraviolet radiation, gamma radiation.

DOI: 10.51368/2307-4469-2022-10-4-404-410

REFERENCES

1. S. V. Gavrish, Applied Physics, No. 4, 42 (2011) [in Russian].
2. K. A. Tumashevich, S. G. Kireev, S. G. Shashkovsky, and D. Yu. Pugachev, Usp. Prikl. Fiz. **7** (6), 608 (2019).
3. S. V. Gavrish, D. N. Kugushev, D. Yu. Pugachev, S. V. Puchnina, and S. G. Shashkovsky, Applied Physics, No. 3, 69 (2020).
4. S. V. Gavrish, V. V. Loginov, and S. V. Puchnina, Usp. Prikl. Fiz. **6** (4), 333 (2018).
5. S. V. Gavrish, Applied Physics, No. 4, 45 (2010) [in Russian].
6. S. V. Gavrish, V. V. Loginov, D. Y. Pugachev, and S. V. Puchnina, Usp. Prikl. Fiz. **7** (5), 480 (2019).
7. I.S. Marshak, A.S. Doinikov, V.P. Zhiltsov, et al., *Pulsed light sources*, 2nd ed. revised. and additional. (Energy, Moscow, 1978).
8. G. N. Rokhlin, *Discharge light sources*. (Energoatomizdat, Moscow, 1991).
9. S. V. Gavrish, N. Yu. Petrenko, and D. Yu. Pugachev, Usp. Prikl. Fiz. **8** (1), 75 (2020).
10. Yu. K. Lingart, V. A. Petrov, and N. A. Tikhonova, TVT **20** (5), 872 (1982).
11. E. R. Dobrovinskaya, L. A. Litvinov, and V. V. Pishchik, *Sapphire Encyclopedia*. (Institute of Single Crystals, Kharkov, 2004).
12. Aric Loytty, Lighting Design and application, February, 14 (1976).
13. S. V. Gavrish, Engineering Technology, No. 6, 56 (2008).
14. G. A. Satunkin, V. A. Tatarchenko, E. M. Zeitlin, and T. N. Yalovets, Izv. USSR Academy of Sciences, ser. Physical **40** (7), 1492 (1976).
15. G. N. Toropkin, *Fundamentals of reliability of products of quantum electronics*. (Sov. Radio, Moscow, 1983).
16. V. I. Arbuzov, *Fundamentals of Radiation Optical Materials Science: tutorial*. (SPbGUITMO, St. Petersburg, 2008).