

Investigation of the characteristics of a pulsed UV radiation source based on an unlimited short-arc discharge in xenon

S. V. Gavrish, S. G. Kireev, A. O. Potapenko and S. G. Shashkovsky

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

Received 30.10.2023; revised 12.11.2023; accepted 17.11.2023

The paper presents the results of a study of a pulsed short-arc unlimited high-pressure xenon discharge as a source of UV radiation. A theoretical analysis of the possibility of increasing the efficiency of xenon discharge radiation in the UV region of the spectrum is performed, the design of a three-electrode gas discharge lamp is described, the electrical, brightness and spectral characteristics of the source being developed are studied.

Keywords: pulse discharge, short-arc lamp, xenon, discharge circuit, aperiodic current, brightness, spectral distribution of radiation.

DOI: 10.51368/2307-4469-2023-11-6-503-510

REFERENCES

1. Zverev A. Yu., Borisevich S. V., Masyakin D. N. et al., Medical alphabet, № 18, 55–58 (2020).
2. Goldstein Ya. A., Golubtsov A. A. and Shashkovsky S. G., Polyclinic, № 3, 51–54 (2014).
3. Marshak I. S., Pulsed light sources, Moscow–Leningrad, Gosenergoizdat, 1963.
4. Lutset B. Ya., Samodergin V. A. and Shchukin L. I., Reviews on electronic technology. Ser. Electro-vacuum and gas-discharge devices, № 4 (287), 57 (1975).
5. Kamrukov A. S. and Kulebyakina A. I. Abstracts of the XXXVI International reports. Zvenigorod Conference on Plasma Physics and TCB. Zvenigorod, February 9–13, 2009, p. 198.
6. Gavrilova L. I., Grebenkov V. S., Doynikov A. S. et al., Pulsed photometry, Leningrad, Mechanical engineering, 1978, release 5, pp. 145–151.
7. Danilchenko A. M., Lutset B. Ya., Samodergin V. A. et al., Reviews on electronic technology. Ser. Electro-vacuum and gas-discharge devices, № 1 (522), 35 (1978).