

ELECTROLUMINESCENCE IN DIAMOND *

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With the development of science in the field of quantum technologies, there was a need for a diamond laser. Recently, a diamond laser was invented with pumping from another laser [1]. The effect of electroluminescence will be useful when creating a diamond semiconductor laser and will facilitate its construction.

The paper presents the effect of electroluminescence at a voltage of up to 100 V and a current of up to 0.2 A with a frequency of 1 kHz. The experiment was carried out in geometry - the point is a plane. A negative charge was applied to the flat electrode and a positive charge was applied to the tip. Electroluminescence depends on the number of defects in the diamond structure. Since diamonds have sectoriality, the number of defects at different points differ. Therefore, electroluminescence does not occur at all points. When contacts come into contact with a diamond, a non-thermal glow occurs (Fig.1). Electroluminescence spectra were also taken.

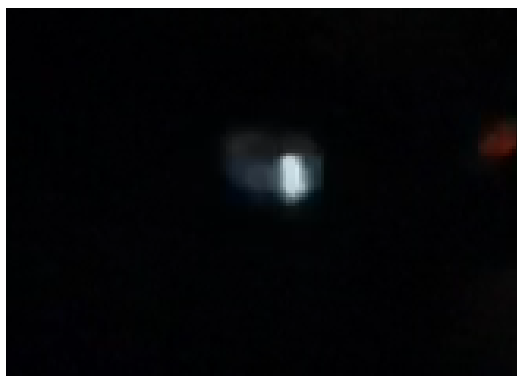


Fig.1. Electroluminescence in diamond.

REFERENCES

- [1] Savvin, A., Dormidonov, A., Smetanina, E. et al. NV– diamond laser. Nat Commun 12,7118, 2021. <https://doi.org/10.1038/s41467-021-27470-7>

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