Contribution ID: **21** Type: **Poster**

Electroluminescence degradation of UV LEDs 365 - 405 nm at long-term operation

Saturday, 26 September 2020 14:26 (4 minutes)

Ultraviolet (UV) light emitting diodes (LEDs) are gradually displac-ing gas-discharge UV sources due to advantages: greater energy effi-ciency, increased reliability, ease of wavelength and intensity changes, narrow spectral range, light weight and compactness. Application of UV LEDs are very diverse, in particular, are relevant applications where high power UV radiation is required - polymerization and curing of materials, disinfected and more. But a significant problem of UV LEDs 365 - 405 nm, is overheating and, accordingly, the rapid degradation of individual chip in LEDs matrices. This primarily applies to LEDs with wavelengths λ = 365 nm [1].
The degradation and thermal characteristics of industrial UV LEDs InGaN/AlGaN/GaN, the maximum wavelength of radiation λ = 365... 405 nm are studied. Rated current 350 mA, electric power 1... 1.4 W, area of the structure 1 mm2. The dependences of radiation intensity on time (degradation curves) at continuous operation for ten UV LEDs with dif-ferent wavelengths for 1 year at a nominal direct current of 350 mA are obtained. It was found that during the year the largest decrease in elec-troluminescence intensity occurred in LED 365 nm, less - 375 nm, and even less - 385 nm. The intensity of 395 nm LED increased slightly, and for 405 nm SD remained unchanged.
REFERENCES
[1] V.P. Veleschuk, A.I. Vlasenko, Z.K. Vlasenko, I.V. Petrenko etc. Optica Applicata 49 (1) 2019, p. 125 – 133

Topics

Session B. Laser physics and modern optoelectronics

Primary author: Mr VELESCHUK, Vitaliy (V.E. Lashkaryov Institute of Semiconductor Physics, NASU)

Co-authors: Prof. VLASENKO, Alexander (V.E. Lashkaryov Institute of Semiconductor Physics, NASU); Ms VLASENKO, Zoya (V.E. Lashkaryov Institute of Semiconductor Physics, NASU); Mr BORSHCH, Volodymyr (National University «Yuri Kondratyuk Poltava Polytechnic»); Ms BORSHCH, Olena (National University «Yuri Kondratyuk Poltava Polytechnic»); Dr SHEFER, Alexander (National University «Yuri Kondratyuk Poltava Polytechnic»); Mr KISSELYUK, Maxim (Podolsky Special Education and Rehabilitation Socioeconomic College); Mr MALYI, Yevgen (Institute for Nuclear Research, NASU)

Presenters: Mr VELESCHUK, Vitaliy (V.E. Lashkaryov Institute of Semiconductor Physics, NASU); Mr MALYI, Yevgen (Institute for Nuclear Research, NASU)

Session Classification: Poster session