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Investigation of the Generation of Droplet Lasers

Sivni V.B., *Student*; Hnatenko O.S., *Assistant*
Kharkiv National University of Radio Electronics, Kharkiv

Liquid lasers are used as narrowband light sources in a visible range of wavelengths from 400 nm to 900 nm and have a very wide fluorescent optical band from 100 nm to 200 nm. There are already several commercially available laser dyes that have very high efficiency and allow miniaturization of the laser resonator. Due to the fact that modern laser technology is actively researching and developing so-called "flexible lasers", drip lasers, fig. 1, can give a certain breakthrough in this direction.

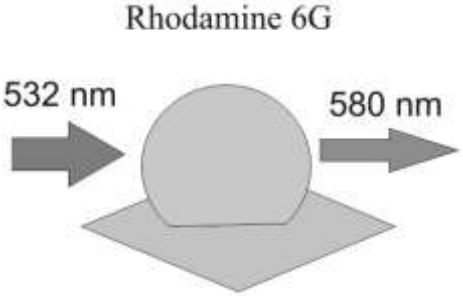

Figure 1 – Scheme of droplet laser

In this paper, the geometric parameters of liquid resonators of the type of a whisperer gallery are investigated and calculated theoretically. Namely, the laser dye Rhodamine 6G in the form of a drop on the substrate is pumped at a wavelength of 532 nm and emits a wavelength of 580 nm. The paper investigates the change in the wavelength of the radiation with a change in the droplet size. And also calculated the maximum angles of adhesion of the drop to the substrate.

The droplet laser can be configured by changing the size of the droplets - they will emit light with another wavelength. The commercial embodiment of the idea is still very far, but in any case, it opens up new ways to improve 3D displays and lasers.