AUTOMATED DOUBLE-BEAM SPECTROPHOTOMETER WITH A LIGHT-SOURCE UPGRADED SOLID-STATE LASER DYE LCI-301

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The problem of creating spectrophotometers many papers. In this paper we propose an automated dual-beam spectrophotometer with a laser light source. As, which selected an upgraded solid-state dye laser LCI-301 with active laser elements on the porous epoxy or glass doped with organic dyes, disc-shaped, allowing to carry out pumping «at one point». These elements are installed in the drum automated rack driven by a stepper motor. Reception is made of a material with high thermal conductivity. Therefore, it also performs the function of the radiator. Changing the emission range is performed by changing the laser-active element, by rotation of the drum stands at the desired angle. The rotation of the drum is realized stepper motor on the computer team. Setting the desired wavelength within a range achieved using a tunable interferometer piezoelectric element by supplying a suitable voltage level.

To change the operating range of optical densities in the instrument set the polarization attenuator that attenuates the laser light by rotating the polarizers in accordance with the law of Malus. Rotation of polaroids to the desired angle stepper motor is carried out by the computer team. Using a computer, the same processing is performed on the measurement results corresponding program.

Keywords: optical density, automation, dyes, laser range spectrophotometer.

References

1. Deulin B. I. Spectrophotometer with a light source in the form of a DFB laser based on organic dyes, *Volgograd: News VolGTU series «Electronics, measuring equipment, radio and telecommunications»*, **8** (23), 90 (2013).
2. EDB «Spectrum». Spectral devices for your laboratory [Electronic resource], Access mode: http://www.okb-spectr.ru/

3. Sigma Lab. Laboratory equipment and analytical equipment. [Electronic resource], Access mode: http://www.sigma-lab.ru/
4. Deulin B. I. Modernization of the solid-state laser based on organic dyes LKI-301. Proceedings of the Oryol State Technical University. Series: *Fundamental and applied problems of technique and technology*, **301** (5), 145 (2013).
5. Deulin B. I. Comparative characteristics of solid-state dye lasers with different matrix. Proceedings of the VI International correspondence scientific and practical Internet-conference *Innovative, fundamental and applied research in the chemistry of agricultural production*, 162 (Publisher house *OrelGAU*, Orel, 2013).
6. Deulin B. I., Filippov V. V. The front radiator for a solid-state dye laser. *Farming and power supply*, **5** (9), 87 (Publisher house *OrelGAU*, Orel, 2015).
7. Deulin B. I., Filippov V. V. Automated stand for solid-state laser elements with membrane radiators. . *Farming and power supply*, **5** (9), 95 (Publisher house *OrelGAU*, Orel, 2015).
8. Deulin B. I. *Automated solid-state dye laser*, Scientific notes of the Crimean Federal University named after V. I. Vernadsky. Biology. Chemistry, **1** (4), 109 (2015).