

POWERFUL DIODE PUMPED LASERS FOR LIDAR AND ILLUMINATION SYSTEMS

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The versions of neodymium diode pumped laser systems with air cooling are presented. The output energy of the Q-switched laser emitter reaches the value of 400 mJ (at 1064 nm). In the three wavelength operation mode the developed laser forms the pulses characterized by energies of 170, 150 and 80 mJ at the wavelengths of 1064, 532 and 355 nm respectively. The output pulse duration is equal to 8–11 ns at the repetition rate of 10 Hz. The multiwavelengths laser emitter is effective for application to the aerosol lidars with the probing range of up to 40 km.

Characteristics of the laser emitters operated in the blue–green spectral region are discussed with regard to underwater communications.

For the eye–safety spectral region (1.5–1.6 μm) compact erbium lasers (output energy of 2–8 mJ, repetition rate of 1–5 Hz) and optical parametric oscillators (output energy of 25–50 mJ, repetition rate of 1–60 Hz) are proposed.

As a new promising model, an example of the diode pumped lasers aimed for an ignition of rocket fuel is shown. Laser emitters of that type can be also used for the object illumination (when the adverse weather conditions are met) and laser spectral analysis purposes. It is shown that in the last case the specialized double–pulsed laser emitters are the most effective light sources.