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Title

Tri-wavelength laser with Nd:CLTGG crystal

Source

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Abstract

Continuous-wave (CW) and passively Q-switched operations of laser diode-end-pumped Nd:CLTGG laser at 1.06  $\mu\text{m}$  was demonstrated for the first time. The laser spectrum was found to be tri-wavelength, with respective wavelengths of 1058.4, 1060.5, and 1065.5 nm for both CW and passive Q-switching regime. The highest CW output power of 2.6 W was obtained with an optical-optical conversion efficiency of 13.9% and a slope efficiency of 17.1%. In the passive Q-switching regime, the highest output power, shortest pulse width, largest pulse energy and highest peak power were achieved as 242 mW, 45.8 ns, 1.65  $\mu\text{J}$  and 0.4 kW, respectively. The passively Q-switched tri-wavelength laser should have the potential to be used for terahertz radiation generation.