464. Title:Continuous-wave and passively Q-switched Nd:LYSO lasers
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Abstract:Continuous-wave (CW) and passively Q-switched performance of a Nd-doped oyorthosilicate mixing crystal, (Nd0.005Lu0.4975Y 0.4975)2SiO5 (Nd:LYSO), were reported. As a result, new dual-wavelength all-solid-state lasers at 1075 and 1079 nm were achieved. When the absorbed pump power was 3.87 W, the CW laser produced 1.1 W output, corresponding to an optical conversion efficiency of 28.4% and a slope efficiency of 32.4%. By using a Cr4+:YAG wafer as the saturable absorber, we achieved Q-switching operation of Nd:LYSO crystal. The maximal average output power, shortest pulse width, largest pulse energy and highest peak power were measured to be 294 mW, 27.5 ns, 34.3 μJ and 1.18 kW, respectively. By difference frequency, these dual-wavelength lasers have potential applications for the generation of a broadband coherent radiation from 0.7-1.3 THz.