

Laser Physics Letters 2016 vol.13 N12

Diode-pumped LiY_{0.3}Lu_{0.7}F₄:Pr and LiYF₄:Pr red lasers

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Abstract

© 2016 Astro Ltd. The laser quality LiY_{0.3}Lu_{0.7}F₄:Pr and LiYF₄:Pr fluoride single crystals were grown in Kazan University by the Bridgeman technique. Spectral-kinetic properties of LiY_{0.3}Lu_{0.7}F₄:Pr and LiYF₄:Pr crystals have been investigated. For the first time, laser oscillations of LiY_{0.3}Lu_{0.7}F₄:Pr crystal have been obtained on $3P_0 \rightarrow 3F_2$ transitions ($\lambda = 640$ nm) under multimode diode pumping at 442 nm, with a slope efficiency of 9 %. Also, continuous-wave lasing has been obtained for LiYF₄:Pr crystal at 640 nm under the same pumping condition with a slope efficiency of 8.5%. The maximum output power of 340 mW has been achieved for both crystals.

<http://dx.doi.org/10.1088/1612-2011/13/12/125801>

Keywords

LiYF₄:Pr crystals, laser diode pumping, LiYLuF₄:Pr crystals 0.3 0.7 4, red laser