

Regarding the possibilities of upconversion UV and VUV lasers based on 5d-4f transitions of rare earth ions in wide band gap dielectric crystals

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Abstract

The getting problems of UV and VUV laser action on the base of trivalent rare-earth ions activated crystals and the opportunities of upconversion pumping are discussed. The data of spectroscopical studies of stepwise multiphoton excitation of 4fn-15d mixed configuration of Nd³⁺, Pr³⁺ and Ce³⁺ ions in LiLuF₄ and LiYF₄ crystals are reported. The selection criterions of an intermediate 4f-state and a range of allowable pumping photon energies for the stepwise multiphoton excitation are proposed.
