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Growth, spectroscopy, and laser characterization of Er:KGdxYbyY1−x−y(WO4)2epitaxial layers

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Abstract

© 2017 Optical Society of America. We report on the composition of Er-doped KGd x Yb y Y 1−x−y (WO 4) 2 layers to be grown onto undoped KY(WO 4) 2 substrate providing fine lattice matching and high refractive index contrast with the substrate and fabrication of high optical quality Er1.3 at: %: KGd 0.2 Yb 0.15 Y 0.65 (WO 4) 2 epitaxial layers with thickness up to 180 μm. Absorption and luminescence properties of the layer were measured and laser action under direct in-band pumping was reported for the first time, to our knowledge, in a non-waveguide configuration. A maximum output power of 16 mW with slope efficiency of 64% was achieved at 1606 nm.

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