



THE 15TH INTERNATIONAL CONFERENCE ON CRYSTAL GROWTH
 in conjunction with
THE 13TH CONFERENCE ON VAPOR GROWTH AND EPITAXY
 and
THE US BIENNIAL WORKSHOP ON ORGANOMETALLIC VAPOR PHASE EPITAXY
 will be held
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Session: THIN FILM GROWTH AND EPITAXY Date: Not Yet Scheduled Time: Room:

Title:	
Identification of the binomium substrate/epitaxial layer to generate active planar waveguides in the system $K(Y_{1-x-y}Gd_xLu_y)(WO_4)_2$ doped with Yb^{3+}	
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Abstract:	
<p>The concept of integrated optics concerns, among others, with the development of light sources, optical switches, modulators and frequency amplifiers and converters inside planar waveguides based on thin film devices. This is an interesting field that has been explored since the appearance of the laser five decades ago. Since then, the optoelectronic properties of many dielectric materials have been investigated to improve the output of the planar waveguides.</p> <p>KRE(WO₄)₂ (RE = Y, Gd and Lu) show important physical anisotropy interesting for laser applications, with very large absorption and emission cross-sections and the possibility of incorporating very high Yb concentrations, useful to develop thin disk laser technology in Yb:KY(WO₄)₂/KY(WO₄)₂ and Yb:KLu(WO₄)₂/KLu(WO₄)₂ epitaxial structures.</p> <p>However, to develop active planar waveguides based on these materials, the difference in refractive indices between the substrate and the epitaxial layer has to be maximized while keeping an appropriate lattice mismatch to maintain the optical quality of the grown layer.</p> <p>In order to investigate which of the $K(Y_{1-x-y}Gd_xLu_y)(WO_4)_2 / KY(WO_4)_2$ pairing has both, the highest refractive index contrast and an appropriate lattice mismatch to be used as a planar waveguide, we have grown $K(Y_{1-x-y}Gd_xLu_y)(WO_4)_2$ single crystals by the Top Seeded Solution Growth (TSSG) Slow-Cooling method using K₂W₂O₇ as solvent. The refractive index and lattice parameters of these crystals were determined through prism coupler and XRD measurements, respectively.</p> <p>$K(Y_{1-x-y}Gd_xLu_y)(WO_4)_2$ epitaxial monoclinic layers were grown on b oriented KY(WO₄)₂ single crystals by Liquid Phase Epitaxy (LPE) and the quality of the epitaxial layer was characterized.</p>	
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