



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Contribution ID: 334

Type: Oral Presentation

Wavelength Selected, Tm:YLF Slab Pump-Source

Friday, 13 July 2012 08:20 (20 minutes)

Abstract content
 (Max 300 words)

1.9 μm Tm:YLF slab lasers are used to pump high energy Ho:YLF slab amplifiers [1] as well as for applications in medicine and defense. We have previously demonstrated high average powers (~ 200 W) from such a system at ~ 1.9 μm . However, efficient pumping of Ho:YLF requires that the Tm:YLF output wavelength reasonably well match one of Ho:YLF's two strong absorption peaks at either 1890 nm or 1940 nm. This is usually accomplished by polarization and output-coupler selection using threshold calculations. Volume Bragg Grating (VBG) mirrors offer a more precise and sure way to select a specific wavelength. A VBG mirror has a periodic variation of the refractive index and is transparent at most wavelengths. It has a high reflectivity at a certain wavelength which fulfills the Bragg condition (in this case 1890 nm). We used a VBG as a back-reflector in a Tm:YLF slab laser. The slab crystal was pumped with a 300 W, 792 nm diode stack using a pump reproducing scheme. It delivered over 80 W of output power at 1890 nm and had a good beam quality compared to other slab laser systems. We also report on initial results of this system pumping a 60 mm Ho:YLF crystal laser. The results indicate that the technology shows great promise for wavelength selection and stabilization of other crystal and fibre laser systems.

Apply to be
 consider for a student
 award (Yes / No)?

No

Level for award
 (Hons, MSc,
 PhD)?

No

Main supervisor (name and email)
and his / her institution

NO

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

Primary author: Dr STRAUSS, Hencharl (CSIR (National Laser Centre))

Co-authors: Mr KING, Gary (CSIR (National Laser Centre)); Mr MAWEZA, Loyiso (CSIR (National Laser Centre)); Dr ESSER, M.J. Daniel (CSIR (National Laser Centre))

Presenter: Dr STRAUSS, Hencharl (CSIR (National Laser Centre))

Session Classification: Photonics

Track Classification: Track C - Photonics