Review Comments

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Title:

Theoretical and experimental investigations of high-power self-mode-locked Pr:YLF visible

lasers

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The authors demonstrated an efficient self-mode-lock oscillation of diode-end-pumped Pr:YLF visible lasers at 522 and 639 nm in this manuscript. The average output powers reached 0.68 and 1.44 W at 522 and 639 nm, respectively, which was the highest among all the visible mode-lock lasers.

Compared with passively mode-locked Pr:YLF lasers, with which the average output powers were limited to less than 100 mW owing to the losses introduced by the insertion of Saturable Absorbers such as SESAMs and nano-sheet materials, this scheme could provide higher output powers and open up new application with those visible sub-nanosecond laser pulses.

The authors speculated the mechanism for self-start mode-locking as the Kerr-lens intensity modulation and investigated the influence of Stark splitting of laser medium induced by laser cavity field, which was reported by Yingxin Bai in 1993 for gas lasers such as He-Ne, copper vaper and CuBr, and simulated their experimental spectra with a numerical model. In fact, the authors reported very interesting pulsing phenomena for a diode-pumped Pr:YLF laser. However, since Bai’s theory has never applied any solid-state lasers, the author should be more careful to conclude and collect more experimental

data to support the authors’s conclusion. For example, it is not 100% clear for an argument that the

pulsation was rather caused simply by spectral beating among few longitudinal modes. Therefore, I

request authors following additional measurements to ensure the author鈥檚 opinion and conclusion.

Also, I recommend to revise the following points before re-review this manuscript.