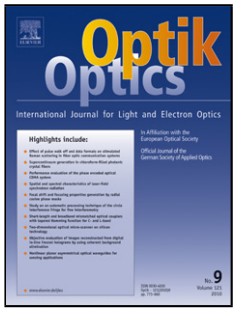

Title: Mode-locked generation in thulium-doped fiber linear cavity laser

Author: A.A. Latiff H. Shamsudin N.S.A. Aziz A.M. Hashim N. Irawati H. Ahmad S.W. Harun

PII: S0030-4026(16)31029-4
DOI: http://dx.doi.org/doi:10.1016/j.ijleo.2016.09.021
Reference: IJLEO 58164

To appear in:

Received date: 16-4-2016
Revised date: 1-9-2016
Accepted date: 5-9-2016

Please cite this article as: A.A.Latiff, H.Shamsudin, N.S.A.Aziz, A.M.Hashim, N.Irawati, H.Ahmad, S.W.Harun, Mode-locked generation in thulium-doped fiber linear cavity laser, Optik - International Journal for Light and Electron Optics http://dx.doi.org/10.1016/j.ijleo.2016.09.021

Mode-locked Generation In Thulium-doped Fiber Linear Cavity Laser

A. A. Latiff [a,d], H. Shamsudin[a], N. S. A. Aziz[c], A. M. Hashim[c], N. Irawati[a], H. Ahmad[a] and S. W. Harun[a,b]

[a] *Photonics Research Center, University of Malaya, 50603 Kuala Lumpur, Malaysia.*

[b] *Department of Electrical Engineering, University of Malaya 50603 Kuala Lumpur, Malaysia.*

[c] *Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia, Jalan Semarak, Kuala Lumpur 54100, Malaysia.*

[d] *Faculty of Electronic & Computer Engineering, Universiti Teknikal Malaysia Melaka (UTeM), 76100 Melaka, Malaysia.*

Email: swharun@um.edu.my

Abstract

A simple all fiber passive mode-locked thulium-doped fiber (TDF) linear cavity laser operating at 1901.6 nm with an incorporation of homemade graphene oxide paper (GOP) based saturable absorber is proposed and practically demonstrated. The TDF linear cavity laser generates mode-locking pulse at a threshold pump power of 540 mW. By varying the pump power from the threshold power to 1052 mW, pulse repetition rates remain constant at 82.4 MHz. At the maximum pump power of 1052 mW, the pulse width is estimated as 12.66 ps, whereas the pulse energy is calculated as 83.1 pJ.

Keywords: Thulium-doped fiber laser; graphene; pulsed laser; mode-locked laser