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Research Article

All-Fiber Dual-Wavelength Thulium–Bismuth Codoped Fiber Laser

1. N. Saidin^{1,2},
2. D. I. M. Zen^{1,3},
3. S. S. A. Damanhuri^{1,2},
4. S. W. Harun^{1,2,*},
5. H. Ahmad¹,
6. K. Dimyati³,
7. A. Halder⁴,
8. M. C. Paul⁴,
9. M. Pal⁴,
10. S. K. Bhadra⁴

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Author Information

- 1 Photonics Research Centre, University of Malaya, Kuala Lumpur, Malaysia
- 2 Department of Electrical Engineering, Faculty of Engineering, University of Malaya, Kuala Lumpur, Malaysia
- 3 Department of Electrical and Electronic Engineering, National Defense University of Malaysia, Kem Sungai Besi, Kuala Lumpur, Malaysia
- 4 Fiber Optics and Photonics Division, Central Glass and Ceramic Research Institute, CSIR, Kolkata, West Bengal, India

*Corresponding author: swharun@um.edu.my (<mailto:swharun@um.edu.my>)

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ABSTRACT

We report a room temperature all-fiber dual-wavelength Thulium–Bismuth codoped fiber laser operating in 1900 nm region using a single fiber Bragg grating (FBG) in a ring configuration. The addition of Bismuth ions as codopant in the gain medium enhances the inhomogeneous broadening effect in the fiber and thus allows a dual-wavelength oscillation with the assistance of the FBG that has a flat top reflection

spectrum. By pumping the gain medium with 1552 nm laser, a dual-wavelength output lines are obtained at 1901.09 and 1901.98 nm with a spacing of 0.89 nm and an optical signal to noise ratio of more than 45 dB as the polarization controller (PC) orientation is adjusted to balance the loss between the two wavelengths. The dual-wavelength laser can also be switched to operate in single-wavelength at either 1901.07 or 1901.98 nm by altering the intracavity polarization using the PC. © 2013 Wiley Periodicals, Inc. Microwave Opt Technol Lett 55:2324–2326, 2013

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