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Configurable triple wavelength semiconductor optical amplifier fiber laser using multiple broadband mirrors (Article)

Ahmad, H.^{a,b} ✉️, Azmy, N.F.^a, Azmi, A.N.^a, Zulkifli, M.Z.^c, Ismail, M.F.^a 🔍

^aPhotonics Research Center, University of Malaya, Kuala Lumpur, Malaysia

^bPhysics Department, University of Malaya, Kuala Lumpur, Malaysia

^cPhysics Department, Centre of Advanced Optoelectronics Research (CAPTOR), Kulliyah of Science, International Islamic University Malaysia, Kuantan, Malaysia

Abstract

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A configurable, triple wavelength fiber laser based on broadband mirrors (BBMs) and an arrayed waveguide grating (AWG) is demonstrated. The laser uses a semiconductor optical amplifier (SOA) as the primary gain medium due to its inhomogeneous broadening property that allows for the generation high intensity lasing wavelengths. The combination of the AWG and BBMs allows for triple lasing wavelength outputs with channel spacing from 0.8 to 4.0 nm to be obtained. The generated output is adjustable between 1540.6 and 1548.6 nm. The proposed SOA-based system is stable and can be used as a reserve laser source for wavelength division multiplexing systems. © 2019 Wiley Periodicals, Inc.

SciVal Topic Prominence ⓘ

Topic: Fiber lasers | Erbium | Wavelength spacing

Prominence percentile: 91.898 ⓘ

Author keywords

AWG broadband mirror multi-wavelength SOA WDM

Indexed keywords

Engineering controlled terms:

Arrayed waveguide gratings Broadband amplifiers Fiber amplifiers Fiber lasers
Multiplexing equipment Optical switches Semiconductor optical amplifiers Waveguides
Wavelength division multiplexing

Engineering uncontrolled terms

Broadband mirrors Channel spacings Inhomogeneous broadening Lasing wavelength
Multi-wavelengths SOA-based systems Triple wavelengths
Wavelength-division multiplexing system

Engineering main heading:

Laser mirrors

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Harith Ahmad harith@um.edu.my Nur F. Azmy Atiqah N. Azmi Mohd Z. Zulkifli Mohd F. Ismail Photonics Research Center University of Malaya Kuala Lumpur Malaysia Physics Department University of Malaya Kuala Lumpur Malaysia Physics Department Centre of Advanced Optoelectronics Research (CAPTOR), Kulliyah of Science, International Islamic University Malaysia Kuantan Malaysia AWG broadband mirror multi-wavelength SOA WDM Ministry of Higher Education, Malaysia GA010-2014(ULUNG) Universiti Malaya HiCoE Phase II Funding RU 013-2018

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