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

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Abstract

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.

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