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O-band to C-band wavelength converter by using four-wave mixing effect in 1310 nm SOA (Article)

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Abstract

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In this paper we provide a detailed account of an ultra-wideband wavelength converter that shifts from 1310 to 1550 nm using a 1310 nm semiconductor optical amplifier as the nonlinear medium. The experimental approach uses an arrayed waveguide grating (AWG) as a method to slice the broadband output ASE of the 1310 nm SOA into multiple outputs at this O-band. A four-wave mixing technique is used to generate the wavelength conversion, whereby two wavelengths at 1310 nm are used and interact with the 1550 nm continuous wave output from a bismuth-based erbium-doped optical amplifier. In this demonstration, the interacting wavelengths are 1316.75, 1317.47 and 1542.21 nm . The downward conversion wavelengths are 1542.93 and 1541.49 nm , with a converted wavelength spacing of 224 nm . © 2010 Taylor & Francis.

SciVal Topic Prominence

Topic: Semiconductor Optical Amplifiers | Mach-Zehnder Interferometers | Wavelength Conversion

Prominence percentile: 85.926

Author keywords

arrayed waveguide grating | bismuth-based erbium-doped optical amplifier | four-wave mixing effect | semiconductor optical amplifier

Indexed keywords

Engineering uncontrolled terms: 1550 nm | Continuous Wave | Erbium-doped optical amplifier | Experimental approaches | Multiple outputs | Nonlinear medium | Two wavelength | Wavelength conversion | Wavelength converter | Wavelength spacing | Wideband wavelength converters

Engineering controlled terms: Arrayed waveguide gratings | Bismuth | Broadband amplifiers | Erbium | Mixing | Optical switches | Optical waveguides | Semiconductor optical amplifiers | Waveguides | Wavelength

Engineering main heading: Four wave mixing

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