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Wide spectra characteristics of gain and carrier-induced refractive index change from measured amplified spontaneous emission spectra

Qingyuan MIAO, Dexiu HUANG, Tao WANG, Zhenhua HU, Peili LI

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Keywords

traveling-wave semiconductor optical amplifier, wide spectra characteristics, small signal gain, carrier-induced refractive index change

Abstract

Based on our derived analytical equation directly relating small signal gain (SSG) with amplified spontaneous emission (ASE) of traveling-wave semiconductor optical amplifier (TWA), SSG spectra in an extended wavelength range from 1460 to 1660 nm are directly calculated from experimentally measured ASE spectra. Subsequently, carrier-induced refractive index changes for various injection currents are obtained with the same spectral range. We demonstrate the availability of our characterizing method by the determination of wide spectra characteristics from a bulk TWA with angled facets.



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