

Abstract

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Performance characteristics of dual-pumped hybrid EDFA/Raman optical amplifier

This paper suggests a hybrid amplifier using an erbium-doped fiber amplifier (EDFA) and Raman amplifier (RA) with dual-pump configuration. This hybrid EDFA/RA optical amplifier (HOA) is dual pumped. The EDFA is forward biased with 980 nm while the RA is reverse biased with 1450 nm in the dual-pump configuration. Both the gain and noise figure are experimentally studied and compared with experimental values of the EDFA/Raman HOA with different pump configurations. The optimum values of the affecting parameters are investigated to get the best characteristics of the HOA, including high gain and a low noise figure. A high gain of 31 dB and low noise of 3.8 dB are achieved. In addition, the flat gain in the wavelength range 1545–1565 nm and the optical signal-to-noise ratio is reduced to 24 dB.