

Multiwavelength SOA fiber ring laser based on bidirectional Lyot filter

ABSTRACT

We have demonstrated multiwavelength fiber laser (MWFL) based on bidirectional Lyot filter and semiconductor optical amplifier (SOA). The intensity dependent loss (IDL) mechanism is utilized to obtain a flat multiwavelength spectrum of 94 wavelength lines within 5 dB bandwidth. The extinction ratio (ER) is 9 dB, while the line spacing is narrow at 0.1 nm. No polarizer is used in the experimental structure, thus the IDL mechanism is only came from SOA. When SOA current is decreased, worse wavelength lines and multiwavelength flatness is achieved. Without proper adjustment of polarization controllers (PCs), the multiwavelength performance is found degraded.

Keyword: Multiwavelength fiber laser; Bidirectional Lyot filter; Intensity dependent loss; Semiconductor optical amplifier