

Broadly tunable L-band multiwavelength BEFL utilizing nonlinear amplified loop mirror filter.

ABSTRACT

We demonstrate a widely tunable L-band multiwavelength Brillouin-erbium fiber laser utilizing a nonlinear amplified fiber loop mirror filter (AFLMF). By manipulating polarization controllers placed in the fiber loop, the erbium peak gain spectrum is able to be shifted. The nonlinear AFLMF induces wavelength-dependent cavity loss and serves as an amplitude equalizer. In addition, it provides flexibility on controlling the amount of light reflected and transmitted into and out of the laser's cavity. By utilizing 100 mW 1480 nm pump and 1.1 mW Brillouin pump power, an average of 24 stable output channels are generated by the proposed structure that could all be tuned over the whole L-band window from 1570 nm to 1610 nm.

Keyword: Lasers; Scattering; Stimulated Brillouin; Nonlinear optics; Fibers; Erbium.