

Tunable range enhancement of Brillouin-erbium fiber laser utilizing Brillouin pump pre-amplification technique

ABSTRACT

We demonstrate an enhanced multiwavelength L-band Brillouin-erbium fiber laser (BEFL), in which the Brillouin pump is pre-amplified before entering the single-mode fiber. The Brillouin pump pre-amplification provided by the Erbium-doped fiber has created higher intensity of Brillouin Stokes line generated in the single-mode fiber that leads to the homogenous gain saturation. Thus the built-up of self-lasing cavity modes is suppressed in a wider wavelength range. In contrary to the conventional linear-cavity BEFL, the number of output channels is enhanced within the same tuning range.

Keyword: Lasers; Fiber; Scattering; Stimulated Brillouin; Nonlinear optics; Fibers