Single-wavelength ring-cavity Brillouin-Raman fiber laser

Abstract

We experimentally demonstrate a ring-cavity, single-wavelength Brillouin-Raman fiber laser. An 11-km long dispersion compensating fiber was used as the medium for the Raman as well as the Brillouin amplification. A threshold power of 27 mW was recorded to get the Brillouin-Stokes line at 1455 nm pump wavelength. At an injected Brillouin pump power of 2 mW, while the Raman pump unit was fixed at a power of 296 mW, the single-wavelength Brillouin-Raman fiber laser can be tuned from 1520 nm to 1580 nm without any self-lasing cavity modes in the laser system. The Brillouin- Stokes line has a 3-dB power fluctuation within 26 nm from 1542 nm to 1568 nm.

Keyword: stimulated Brillouin scattering, stimulated Raman scattering, ring cavity, single wavelength, wavelength tunability