

Abstract

We experimentally investigate the performance of L-band multiwavelength Brillouin–Raman fiber laser (MBRFL) under forward and backward pumped environments utilizing a linear cavity. A short length of 1.18 km dispersion compensating fiber is used as a nonlinear gain medium for both Brillouin and Raman gain. Experimental results indicate that the gain in the copumped laser configuration is higher than the gain in the counterpumped configuration. A stable and constant number of Brillouin Stokes lines up to 23 Stokes, with channel spacing of 0.08 nm and more than 20 dB of optical signal to noise ratio, can be generated as well as tuning over 20 nm in the L-band region from 1570 to 1590 nm. The laser generating the Brillouin Stokes lines exhibits flat amplitude bandwidth and high average output power of 0.8 and 1.6 dBm for the copropagation and counterpropagation pumps, respectively. Moreover, the tuning range bandwidth of the MBRFL can be predicted from the oscillated Brillouin pump gain profile.