

Contribution of Rayleigh scattering on Brillouin comb line generation in Raman fiber laser

ABSTRACT

We demonstrate the generation of multiple Brillouin Stokes lines generation assisted by Rayleigh scattering in Raman fiber laser. The linear cavity is utilized to take advantage of the Rayleigh scattering effect, and it also produces two strong spectral peaks at 1555 and 1565 nm. Under a strong pumping condition, the Rayleigh backscatters contribute to the oscillation efficiency, which increases the Brillouin Stokes lines intensity between these two wavelength ranges. The multiple Stokes lines get stronger by suppressing the buildup of free-running longitudinal modes in the laser structure.