

Half-opened cavity random distributed feedback laser with FBG wavelength variation

ABSTRACT

The work presented in this paper is on a backward-pumped Raman random distributed feedback laser with half-opened cavity configuration. Rayleigh backscattering effects were realized in a 41 km fiber length that functioned as a virtual mirror at one fiber end while at the other end, a single fiber Bragg grating with different central wavelength is deployed as a reflector. Pump power threshold, output power and efficiency that corresponding to FBG wavelengths of 1546.8 nm, 1550.4 nm and 1557.7 nm are studied. The obtained results show that the peak reflection wavelength of FBG nearest to the first Raman Stokes shift gives better threshold and output power, hence, improves the efficiency of random lasing.

Keyword: Backward-pumped Raman laser; Half-opened cavity; Random lasing