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Title:Tunable two wavelengths linear-cavity Yb-doped fiber laser based on volume grating

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Abstract:That homogeneously broadened fiber laser, which can output two wavelengths simultaneously, is demonstrated by using net gain equalization method which makes each wavelength's loss equals to gain in order to suppress mode competition. This linear-cavity Yb-doped fiber (YDF) laser realizes simultaneously single wavelength and two wavelengths stable output with linewidth of 0.012 and 0.020 nm respectively at room temperature. Each of the two wavelengths can be tuned approximately from 1013 to 1078 nm by the spectra separation and characteristics of selected wavelengths. The maximum and minimum wavelength spaces are 65.00 and 1.04 nm. The suppression effect to each other is stronger with smaller wavelength spacing. The output power of each wavelength equilibrates with the total maximum output power is 40.7 mW. This tunable two wavelengths laser can generate THz based on the beat frequency and also can be used as the optical source of optical coherence tomography (OCT) due to its tunable wavelength.

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