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Tunable passively Q-switched ultranarrow linewidth erbium-doped fiber laser (Article) (Open Access)

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Abstract

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A tunable passively Q-switched erbium-doped fiber laser with ultranarrow linewidth is proposed and demonstrated. With the single wall carbon nanotubes (SWCNTs) as the passive Q-switch, the ultranarrow linewidth laser operation is realized based on spectral filtering effect. using an ultranarrow tunable bandpass filter (UNTBF). The Q-switched laser spectrum is tunable from 1525 to 1561 nm, covering a wavelength range of 36 nm. At 1545 nm, the highest repetition rate of ~38 kHz and the lowest pulse width of 1.15 μs are obtained, with the corresponding pulse energy of approximately 0.18 nJ. The linewidth measurement using self-heterodyne technique yields a linewidth value of 17.5 kHz, which may be the narrowest linewidth for a Q-switched fiber laser to the best of our knowledge. © 2020 The Authors

SciVal Topic Prominence

Topic: Fiber Lasers | Saturable Absorbers | Q Switching

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Chemistry database information

Substances

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Author keywords

Doped fiber laser | Passively Q-switched and erbium | Tunable wavelength | Ultra-narrow linewidth

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