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Highly stable graphene-assisted tunable dual-wavelength erbium-doped fiber laser (Article)

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Abstract

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A highly stable tunable dual-wavelength fiber laser (TDWFL) using graphene as a means to generate a highly stable output is proposed and generated. The TDWFL comprises a 1 m long, highly doped erbium-doped fiber (EDF) acting as the linear gain medium, with a 24-channel arrayed waveguide grating acting as a wavelength slicer as well as a tuning mechanism to generate different wavelength pairs. The tuned wavelength pairs can range from 0.8 to 18.2 nm. A few layers of graphene are incorporated into the laser cavity to induce the four-wave-mixing effect, which stabilizes the dual-wavelength output by suppressing the mode competition that arises as a result of homogenous broadening in the EDF. © 2013 Optical Society of America.

SciVal Topic Prominence ⓘ

Topic: Erbium-Doped Fiber | Ring Lasers | Thulium

Prominence percentile: 92.917 ⓘ

Indexed keywords

Engineering controlled terms:

Arrayed waveguide gratings Fiber lasers

Engineering uncontrolled terms

Dual wavelength fiber lasers Dual-wavelength Dual-wavelength outputs
Erbium doped fiber laser Erbium doped fibers Highly stables Homogenous broadening
Linear gain Mode competition Tuning mechanism Wavelength pair

Engineering main heading:

Graphene

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