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S-band Q-switched thulium-doped fluoride fiber laser with reduced graphene oxide as saturable absorber

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Abstract

In this article, a Q-switched thulium-doped fluoride fiber (TDFF) laser operated in the S-band with reduced graphene oxide (GO) as saturable absorber (SA) has been demonstrated by experimental means. The excess pump from the TDFF via 1400 nm pumping has been addressed and discussed based on the energy level characteristics of the gain medium. To this end, a laser cavity reconfiguration has been proposed in order to resolve the excess pump issue. Moreover, an efficient preparation technique for reduced GOSA has been demonstrated on the basis of understanding its chemical properties. © 2025 Astro Ltd. All rights, including for text and data mining, AI training, and similar technologies, are reserved.

Author keywords

2D material; fiber laser; graphene oxide; Q-switched laser; saturable absorber; thulium-doped fluoride fiber

Indexed keywords

Engineering controlled terms

Data mining; Fibers; Fluorine compounds; Graphene oxide; Optical pumping; Pumps; Q switching; Reduced Graphene Oxide; Thulium compounds

Engineering uncontrolled terms

2d material; Energy; Fluoride fibre; Gain medium; Graphene oxides; Level characteristic; Q-switched; Q-switched lasers; Reduced graphene oxides; Thulium-doped fluoride fiber

Engineering main heading

Fiber lasers; Q switched lasers; Saturable absorbers

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