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S-band Q-switched fiber laser using MoSe₂ saturable absorber (Article)

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Abstract

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A passively Q-switched S-band fiber laser using Molybdenum Diselenide (MoSe₂) saturable absorber (SA) is proposed and demonstrated. The SA is fabricated by depositing MoSe₂ onto two fiber ferrules using the drop-cast method before heating and connecting the two fiber ferrules to form the SA. The passively Q-switched fiber laser designed using the MoSe₂ SA has an operational range of 1491.0–1502.0 nm. The output pulse train has a pulse-width ranging from 2.0 μs to 1.0 μs and corresponding repetition rate of between 34.5 kHz and 90 kHz with increasing pump powers, as well as a signal-to-noise of about 35.97 dB. The peak performance of the proposed laser is between 1480.0 and 1490.0 nm, corresponding to the first peak gain region with the S-band. © 2016 Elsevier B.V.

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Author keywords

Fiber laser Molybdenum diselenide Q-switching S-band, saturable absorber

Indexed keywords

Engineering controlled terms: Fiber lasers Fibers Optical pumping Pulse repetition rate Q switched lasers Saturable absorbers Selenium compounds Signal to noise ratio

Engineering uncontrolled terms: Molybdenum diselenide Operational range Passively Q-switched Peak performance Q-switched fiber lasers Repetition rate S-band fiber lasers Signal to noise

Engineering main heading: Q switching

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