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All-fiberized, mode-locked laser at 1.95 μ m using copper chalcogenide Cu₂Te-based evanescent field interaction (Article)

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Abstract

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For the first time, a copper telluride (Cu₂Te) based saturable absorber (SA) was demonstrated for mode-locking in a thulium-doped fiber laser. Layers of Cu₂Te were deposited onto a side polished fiber (SPF) using the optical deposition technique, forming an all-fiber SA device. The nonlinear optical properties of the SA device were investigated based on the balanced twin-detector measurement scheme. The Cu₂Te-deposited SPF SA was capable of generating stable soliton mode-locked pulses with a pulse duration of 1.58 ps at a center wavelength of 1951 nm with a signal to noise ratio (SNR) of more than 60 dB, as well as a peak power of 250 mW and a pulse energy of 0.39 nJ. © 2020 Elsevier B.V.

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Topic: Saturable Absorbers | Erbium-Doped Fiber | Mode-locked Fiber Lasers

Prominence percentile: 99.458 ⓘ

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Indexed keywords

Engineering controlled terms: Evanescent fields Fiber lasers Fibers Mode-locked fiber lasers Nonlinear optics
Optical properties Saturable absorbers Signal to noise ratio

Engineering uncontrolled terms: Copper chalcogenides Copper tellurides Field interactions Mode-locked laser
Non-linear optical properties Optical depositions Side-polished fiber Thulium-doped fibers

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