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## Passive Q-switched pulse Erbium doped fiber laser Antimony Telluride ($Sb_2Te_3$) as saturable absorber

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This paper demonstrates the passively Q-switched pulse Erbium doped fiber laser (EDFL) using thin film Antimony Telluride ($Sb_2Te_3$) as saturable absorber (SA) for the first time. The modulation depth of the $Sb_2Te_3$ is measured as 28.01% with input intensity 0.02MJ/cm$^2$ at 63.8mW pump power that operated at 980-nm laser source. Handmade mode-locked fiber laser is utilized for measuring modulation depth by using twin detector method with period 59.52ns and repetition rate 16.8MHz. The simple design is fabricated to generate passively Q-switched pulse fiber laser with maximum pump power at 69.5mW with an operating wavelength at 1560nm for this experimental setup. The repetition rate and pulse width are 30.21kHz and 0.54µs respectively. The Q-switched pulse energy is 29.43nJ and the optical signal to noise ratio is 63.82dB for this study.

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