High signal-to-noise ratio Q-switching erbium doped fiber laser pulse emission utilizing single layer trivial transfer graphene film saturable absorber

ABSTRACT

This paper presents the high signal-to-noise ratio (SNR) Q-switched erbium-doped fiber laser pulse emission using a commercial single layer graphene (SLG) film as a saturable absorber (SA). A sandwiched-type structure with transferred single layer SLG film between two fiber ferrules is formed to function as the SA. Q-switched pulse emission with repetition rate from 47.25 kHz to 67.39 kHz and round-trip time per oscillation from 7.42 µs to 10.36 µs are obtained from the laser cavity set-up. The SNR of 62.64 dB shows a good quality of pulse generation using the SLG film as SA. The effortless production of SLG is enabling factor to produce fast fabrication and low cost SA for application in Q-switched pulsed fiber lasers.

Keyword: Erbium-doped fiber laser; Q-switched pulsed laser; Saturable absorber; Signal to noise ratio; Single layer graphene film