Abstract: MXenes have recently gained significant research interest due to its graphene-like structure that allows for a multitude of applications such as electronics, batteries and optics to be realized. In this work, stable Q-switched pulses are passively obtained from a thulium-doped fiber laser using an MXene T[3C(2)T(X)coated microfiber as a saturable absorber (SA). The generated pulses have center lasing wavelength 1976 nm with a pulse repetition rate and pulse width ranging between 16 kHz to 59 kHz and 13 μs to 2.4 μs respectively. The generated pulses can be tuned over a wavelength range of 155 nm from 1895 nm to 2050 nm. The MXene based SA has significant potential for generating pulsed laser outputs that will find uses in the areas of sensing, medicine and spectroscopy around the ‘eye safe’ 2 μm region.

Author Keywords: MXene; tunable; microfiber; Q-switched

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