

Supplementary Materials for manuscript
“MXene Core-Shell Nanosheets: Facile Synthesis, Optical Properties and
Vesatile Photonics Applications”

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Table S1. Output performance comparison of mode-locked fiber lasers using various 2D materials SAs at a wavelength of 1.55 μm .

Materials	SA	Modulation Depth (%)	Output Power (mW)	Pump Power (mW)	Pulse Width (fs)	3-dB Spectral Width (nm)	Radio Frequency (dB)	Ref.
GR	Graphene	66.5	2	70	756	NA	65	[1]
	GR oxide	1.4	0.83	34.5	613	4.2	70	[2]
BP	BP	9	2	30	940	3.39	50	[3]
	BPQDs	5	NA	75	1007	3.4	50	[4]
TIs	Bi_2Se_3	15.7	0.8	55	600	4.63	65	[5]
	Sb_2Te_3	NA	0.5	45	1800	1.8	60	[6]
TMDs	WS_2	5.1	1.8	85	21100	14.5	NA	[7]
	MoS_2	4.3	1.78	22	710	4	60	[8]
MXenes	$\text{Ti}_3\text{C}_2\text{T}_x$	29.3	NA	50	NA	NA	NA	[9]
	$\text{Ti}_3\text{C}_2\text{T}_x$	NA	NA	263	530	5.04	NA	[10]
	$\text{Ti}_3\text{C}_2\text{T}_x$	0.96	NA	146	1280	2.71	71	[11]
	$\text{Ti}_3\text{C}_2\text{T}_x$	11.3	0.283	118.5	597	5.21	55.2	[12]
	$\text{Ti}_3\text{C}_2\text{T}_x$	4.75	1.4	70	114	25.6	65	[13]
	$\text{Ti}_3\text{C}_2\text{T}_x$	20	3	238	159	22.2	62	[14]
	$\text{Ti}_3\text{C}_2\text{T}_x$	41	NA	60	946	3.1	70.7	[15]
	$\text{Ti}_3\text{C}_2\text{T}_x$	NA	3.48	400	800	3.75	65	[16]
	Ti_3CNT_x	1.7	0.05	22	660	5	60	[17]
	$\alpha\text{-Mo}_2\text{C}$	4.29	NA	127.1	2790	1.66	45	[18]
	$\alpha\text{-Mo}_2\text{C}$	10.45	NA	100	313	13.75	79	[19]
	Ti_2CT_x	NA	2.91	102	265	11.1	47	[20]
	Ti_2CT_x	15.7	NA	65	5300	3.4	62	[21]

Ti ₂ CT _x @Au	Ti ₂ CT _x @Au	6.6	0.491	20	670	3.2	62	This work
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Table S2. Progress of SFFLs based on LCLM with 2D material

SA	Gain Medium	Linewidth [kHz]	SNR [dB]	Power [mW]	Power Fluctuation [%]	Reference
Graphene	YDF	NA	~60	16	NA	[22]
MoS ₂	YDF	5.89	~60	15.3	<±2.7	[23]
Ni-MOFs	EDF	3.2	>52	1.07	<1.3	[24]
MXene QDs	EDF	5	54	7.6	<0.75	[25]
Ti ₂ C	EDF	1.3	>38	1.44/5.34	<1.8/<7.1	[26]
Ti ₂ C@Au	EDF	1	48.77	1.18/11.16	0.76/1.34	This Work

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