

Supporting Information

Nonlinear optical properties of PtTe₂ based saturable absorbers for
ultrafast photonics

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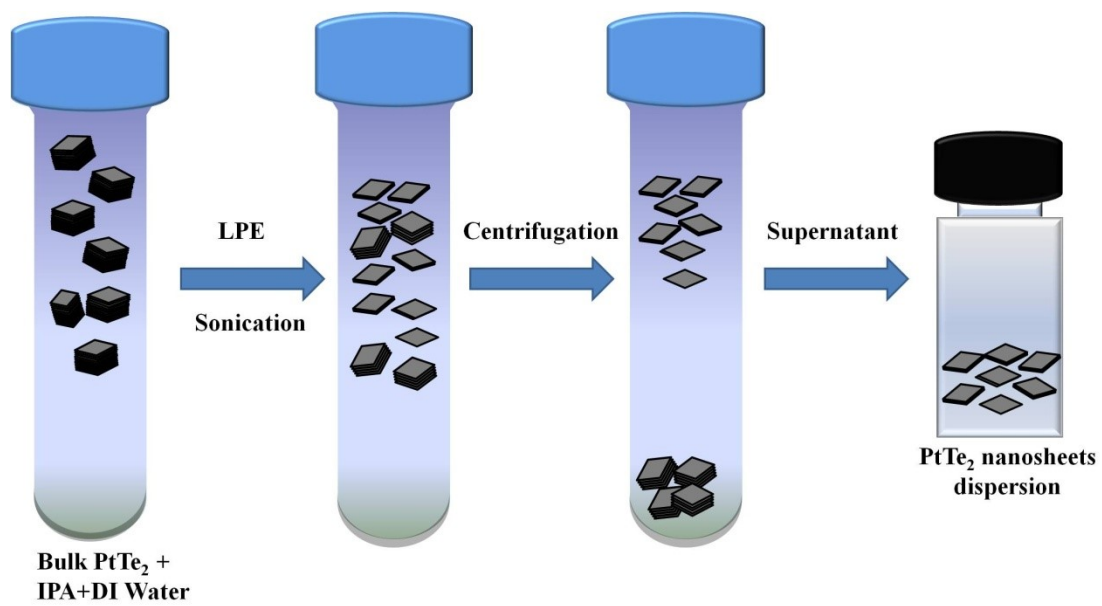


Figure S1. Schematic diagram of preparation process of PtTe₂ nanosheets

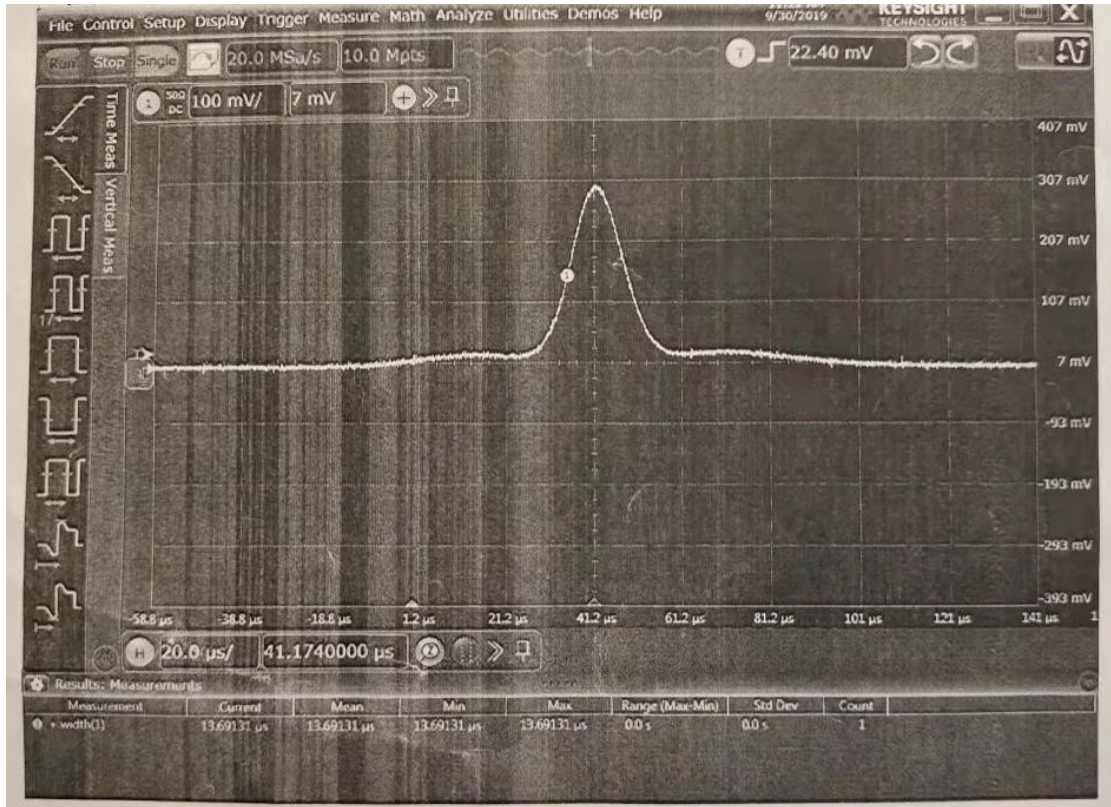


Figure S2. The pulse profile of the test laser for measurement of nonlinear optical response

Figure S2 shows the test report of the commercial 1.5 μm femtosecond laser. The pulse profile was detected by an autocorrelator (Femtochrome, FR-103XL). It can be seen that the pulse width on the oscilloscope is 13.69 μs. Based on the characteristics of the autocorrelator, the actual pulse width is $15.5 \text{ (ps/ms)} * 13.69 * 0.707 \approx 151 \text{ fs}$.

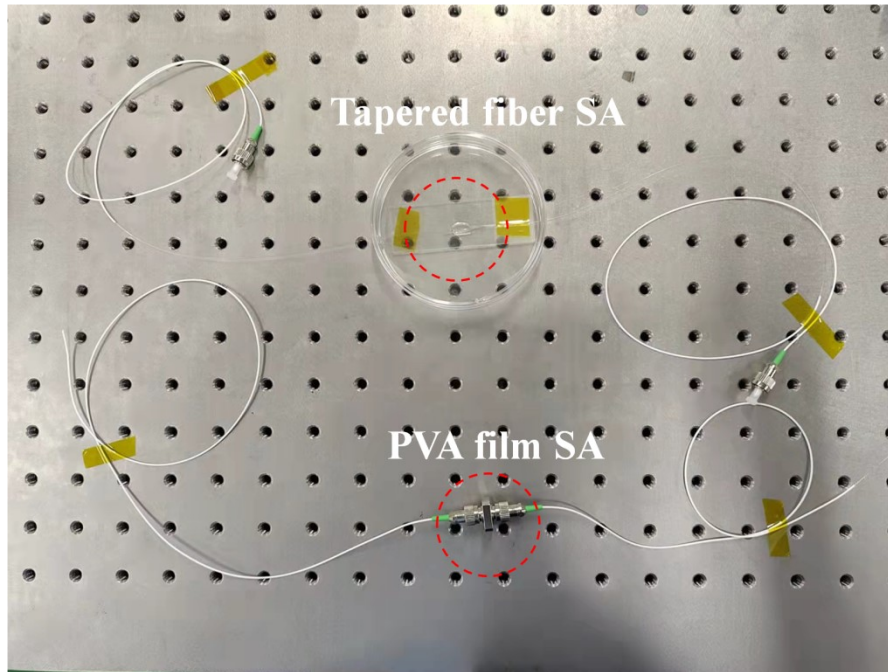


Figure S3. Insert methods of two different forms of SA

Figure S3 shows the macro view of tapered fiber SA and PVA film SA, respectively. Both ends of the samples can be fused with optical fiber connectors, which can be directly connected to the twin-detector measurement system or the laser cavity.

(a)

Equation	$y = 1-A/(1+x/C)-B$		
Adj. R-Squar	0.99082		
		Value	Standard Error
B	A	0.00914	1.18471E-4
B	B	0.55341	8.30356E-5
B	C	55.7376	2.8276

(b)

Equation	$y = 1-A/(1+x/C)-B$		
Adj. R-Sq	0.99686		
		Value	Standard
B	A	0.08954	0.00193
B	B	0.23153	0.00202
B	C	1389.48	62.23606

Figure S4. The original data of the nonlinear fitting. (a) PVA film SA, (b) tapered fiber SA.

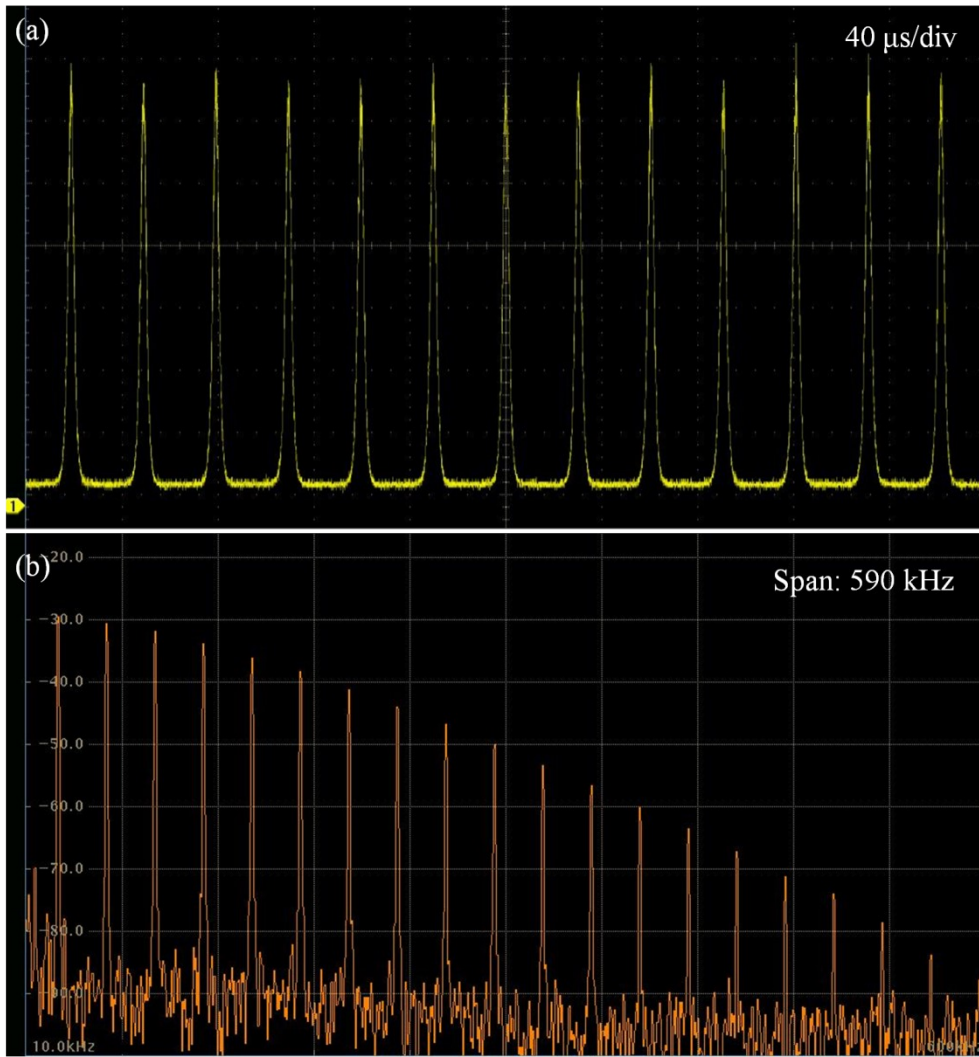


Figure S5. The output pulse train and broadband RF spectrum of the Q-switched laser at a pump power of 160 mW.

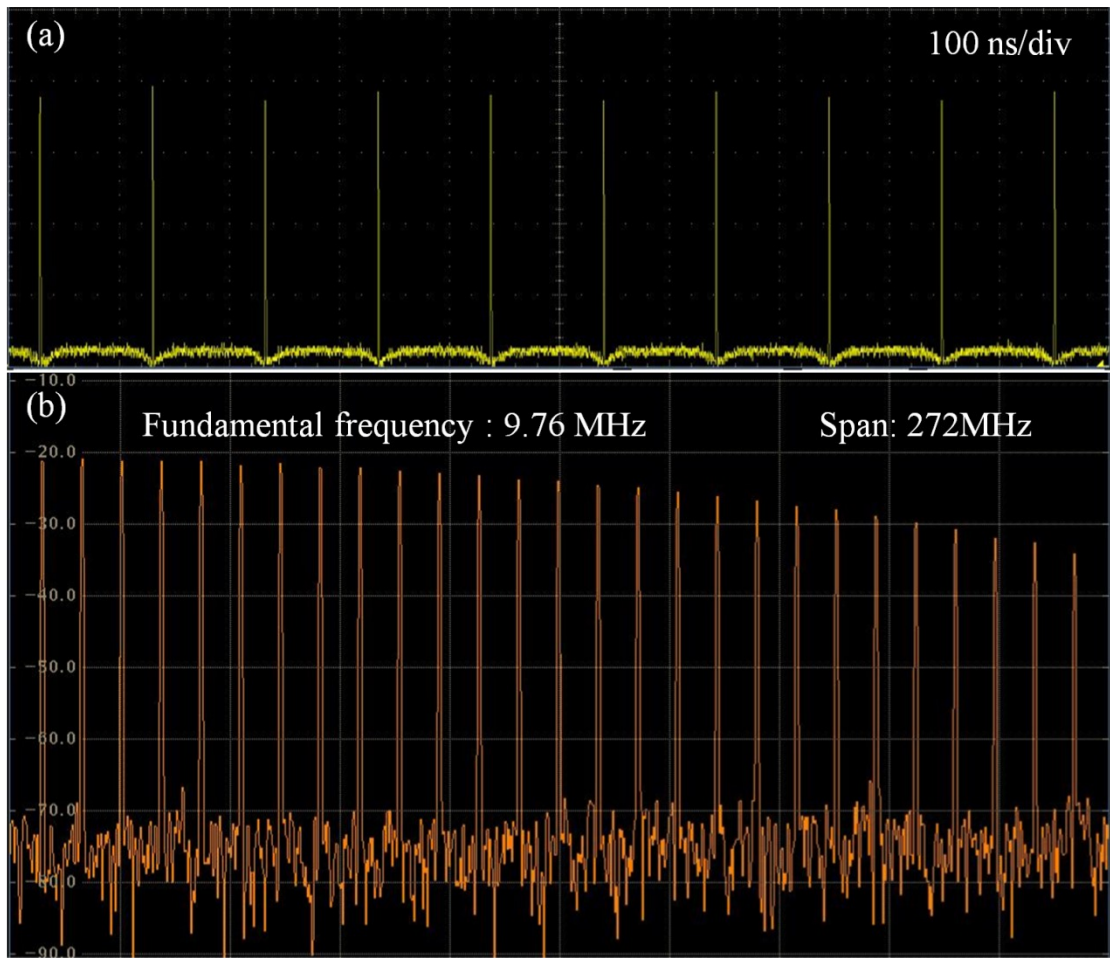


Figure S6. The output pulse train and broadband RF spectrum of the mode-locked laser

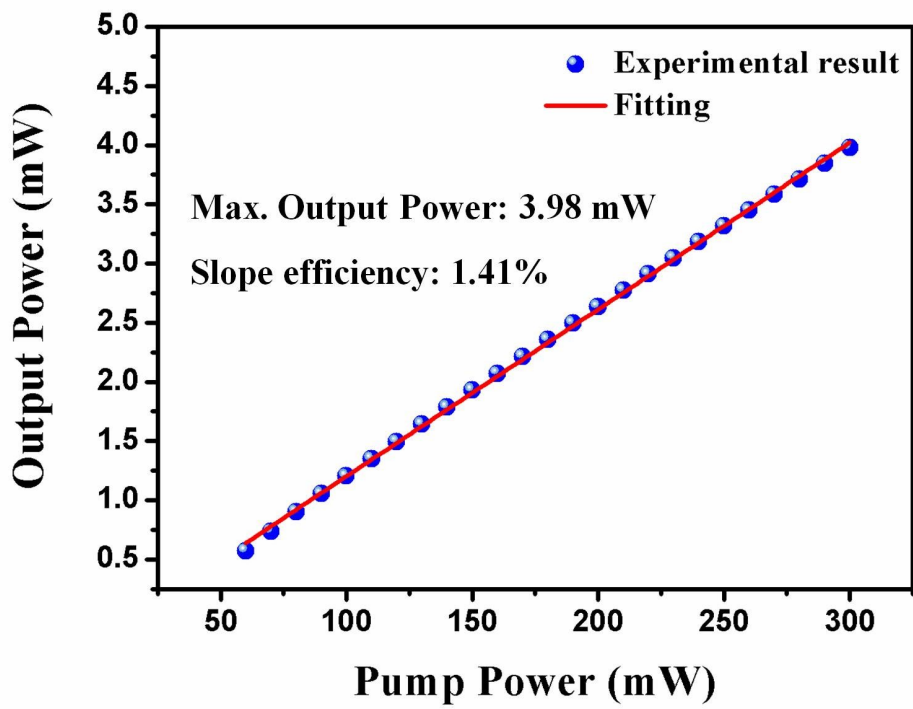


Figure S7. The curve of output power as a function of pump power of the mode-locked Er-doped fiber laser.