Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Band Structure Tuning of α-MoO_3 by Tin Intercalation for Ultrafast Photonics Applications

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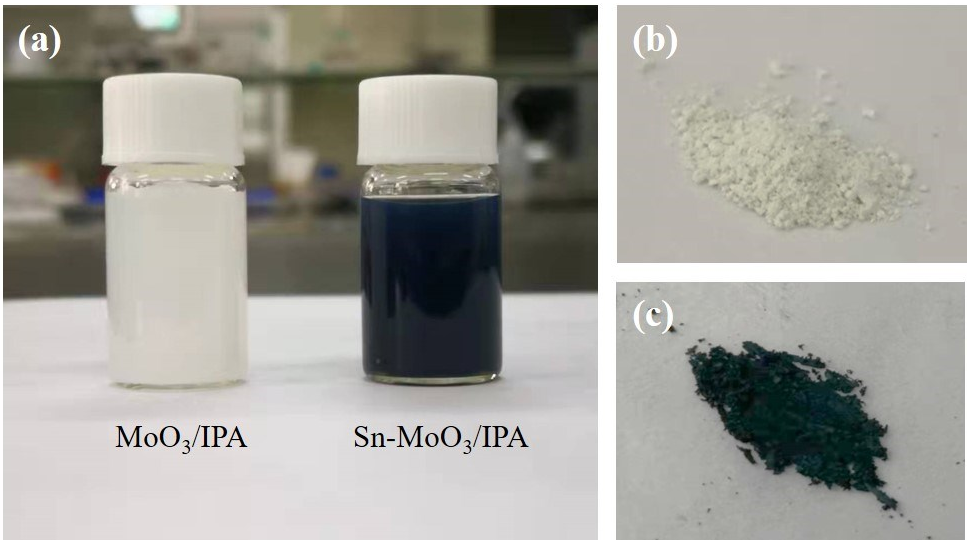

Figure S1. The digital images of (a) MoO_3/IPA, Sn-MoO_3/IPA dispersion; (b) MoO_3 and (c) Sn-MoO_3 powder.

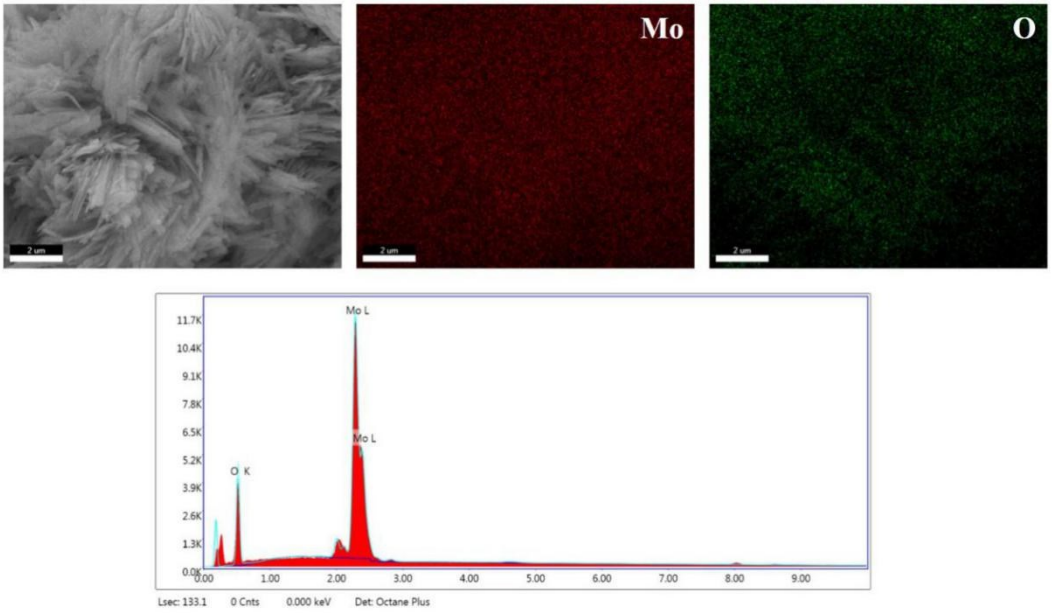

Figure S2. SEM image of the MoO_3 nanoribbons, with corresponding EDS mappings of Mo and O elements.

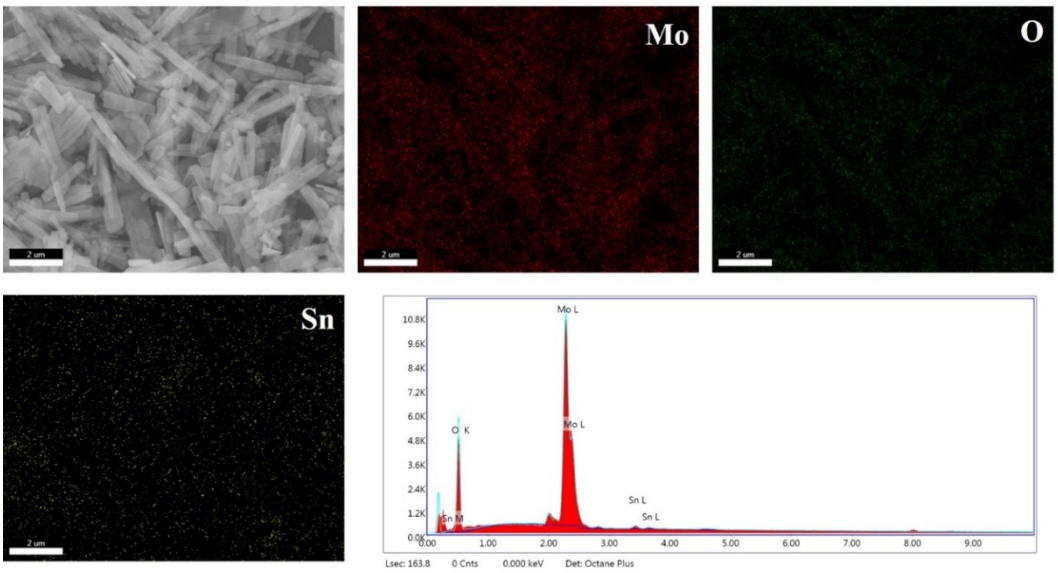

Figure S3. SEM image of the Sn-MoO_3 nanoribbons, with corresponding EDS mappings of Mo, O, and Sn elements.

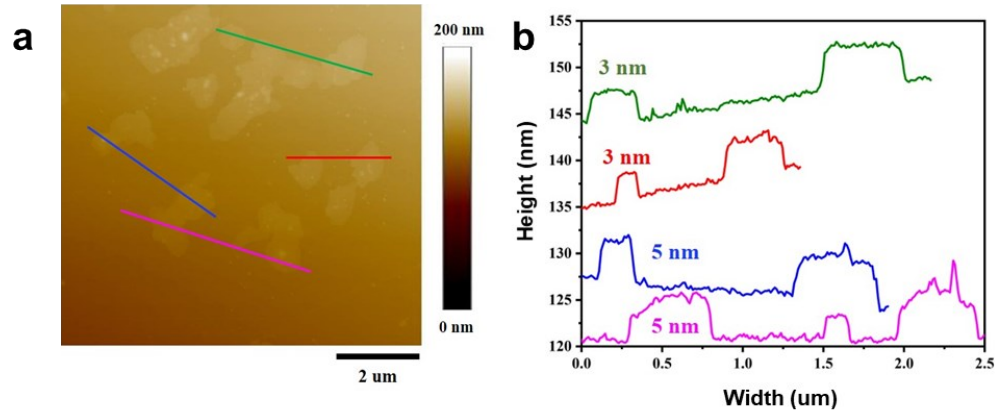

Figure S4. (a) AFM images of Sn-MoO_3 and (b) corresponding height profiles.

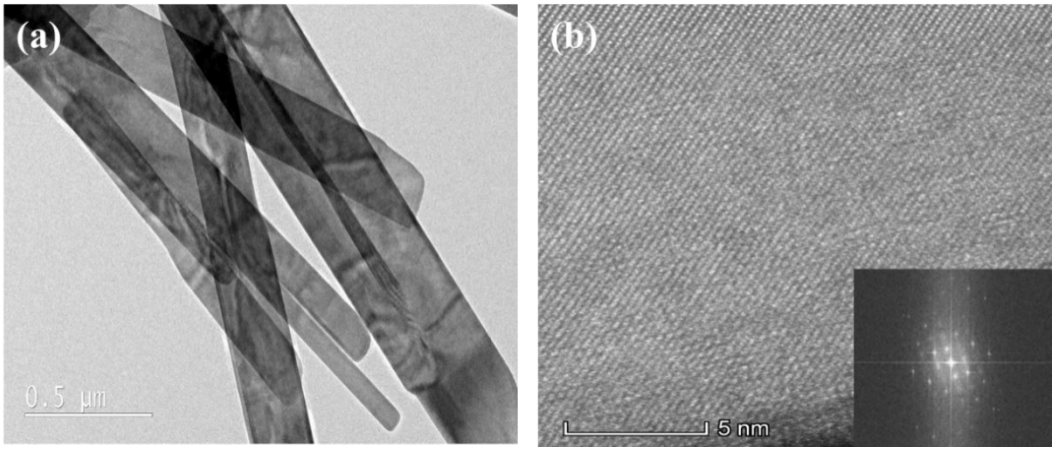

Figure S5. (a) TEM and (b) HRTEM images of MoO_3 nanoribbons.

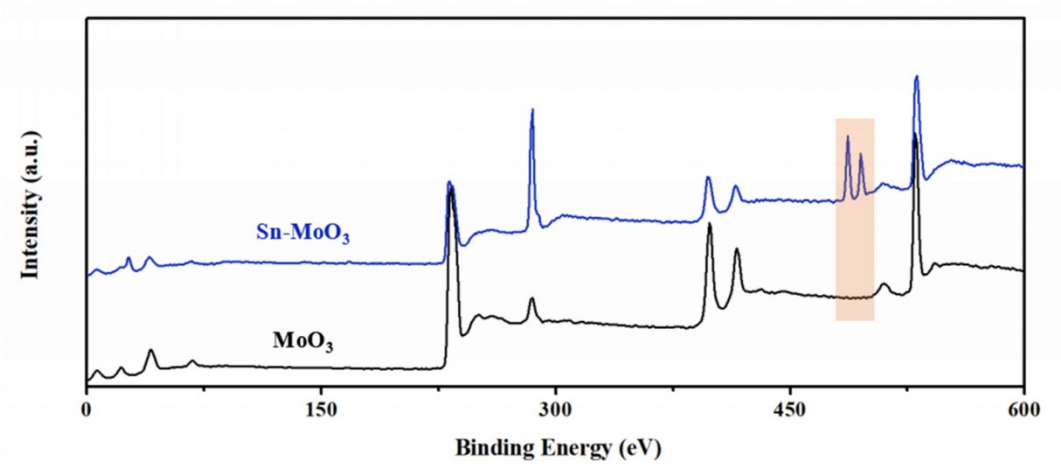

Figure S6. The XPS spectra of MoO_3 nanoribbons

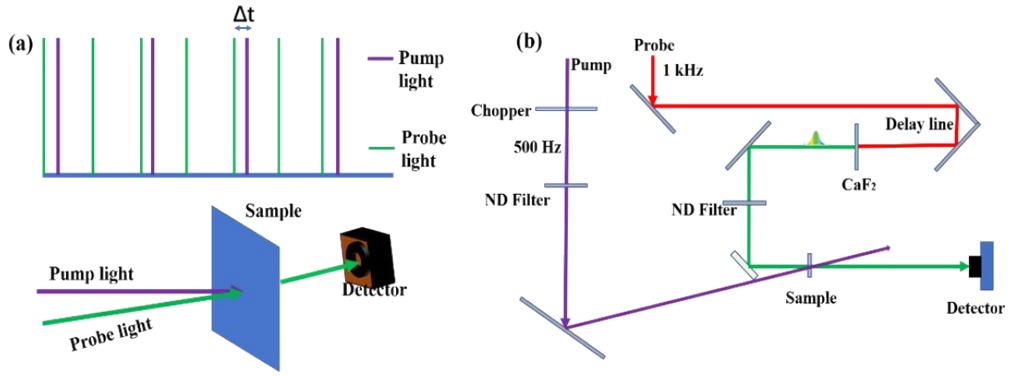

Figure S7. The work principle of pump probe setup. (a) The relationship between pump light and probe light in time domain and space domain; (b) The schematic diagram of pump probe setup.

Table S1: Carrier dynamics amplitude and relaxation times

Materials	A_1	τ_1 (fs)	A_2	τ_2 (ps)	A_3	τ_3(ps)
MoO_3@508 nm	0.0104	426.5	0.00555	419.9	-	-
Sn-MoO_3@508 nm	0.0123	228.6	0.00462	402.4	-	-
MoO_3@749 nm	-0.00509	356.1	0.00064	299.8	-0.00054	2.384
Sn-MoO_3@749 nm	-0.0073	227.8	0.00078	289.4	-0.00098	0.845

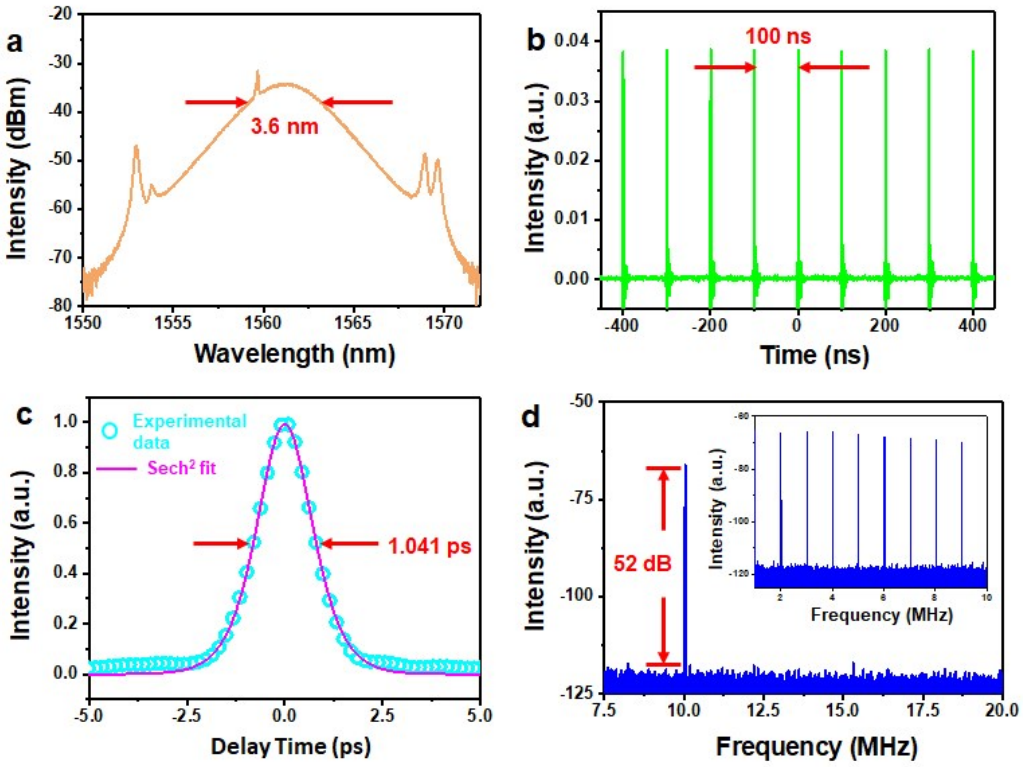

Figure S8. The nonlinear optical effect of MoO_3 in 1.5 μm; (a) Optical spectrum, (b) corresponding pulse train, (c) auto-correlation trace, (d) RF spectrum.