Supplementary Information for

Modulation of Polaritons in Chemically Doped Graphene Ribbon/α-MoO_3 Heterostructures

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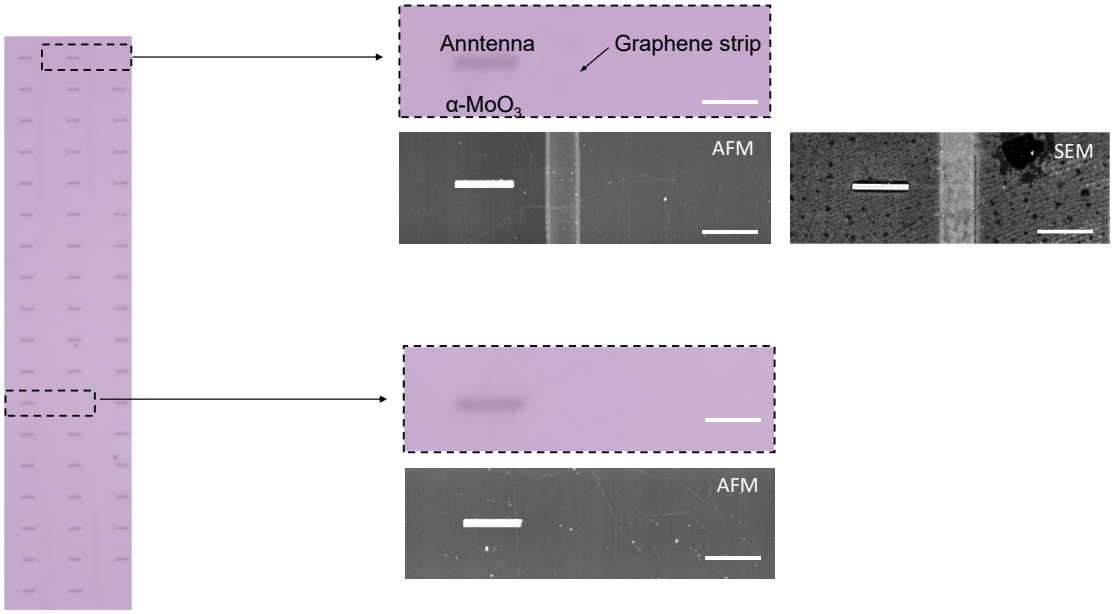
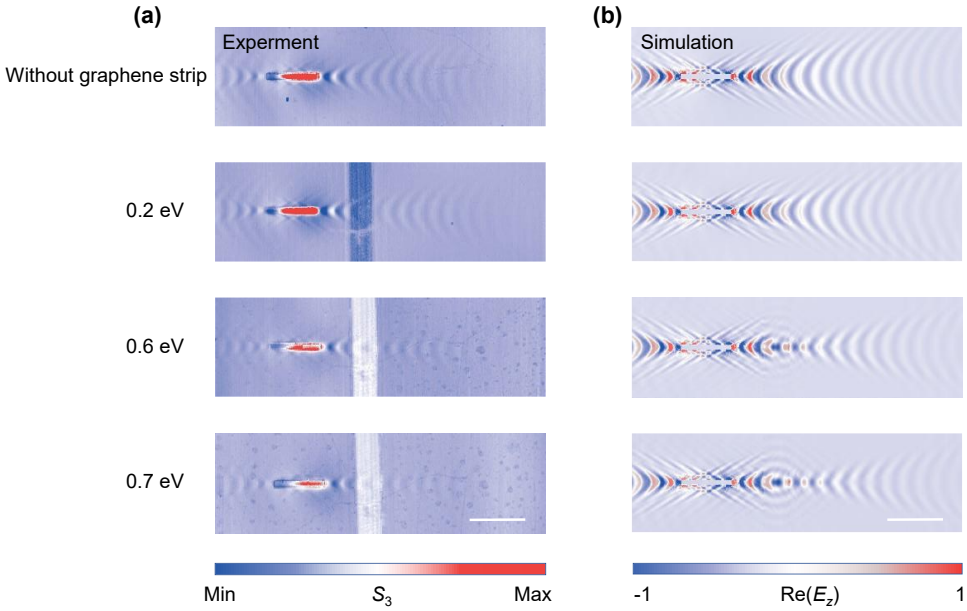


Figure S1. Optical photos, AFM images, and SEM images of areas with and without graphene stripes, with a scale bar of 3 μm.



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29 **Figure S2.** (a) Experimentally measured near-field third-order wavelength
30 signals along the *x*-direction at graphene Fermi levels without graphene strips,
31 0.2 eV, 0.6 eV, and 0.7 eV, respectively. (b) Corresponding numerically
32 simulated electric field intensity distribution (E_z).

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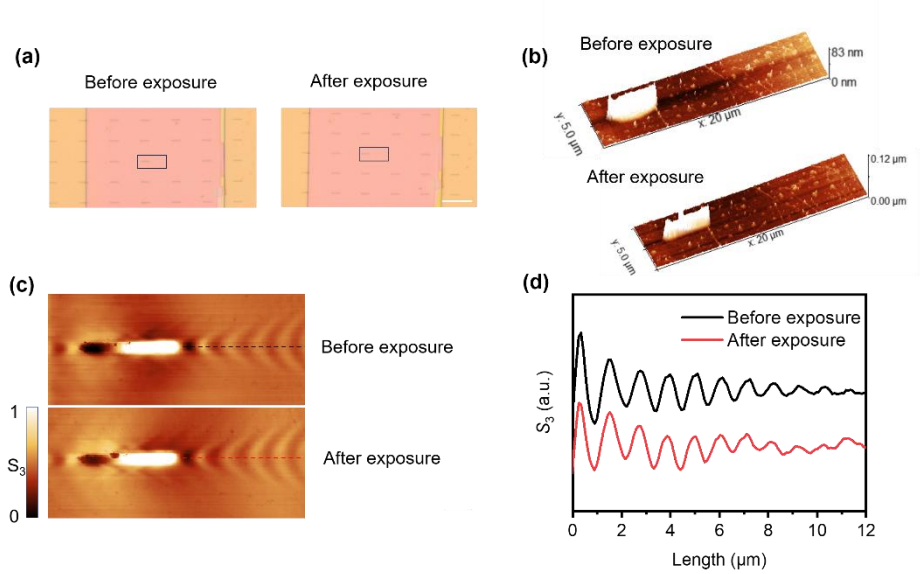

Figure S3. Control experiment on the effect of NO_2 doping on bare α-MoO_3. (a) Optical images of α-MoO_3 before and after NO_2 exposure, with a scale bar of 10 µm. (b) AFM topography shows negligible change in surface morphology. (c) Near-field optical images before and after NO_2 exposure, with a scale bar of 1 µm. (d) Extracted near-field profiles from the dashed lines in (c), show that the polariton wavelength of the bare α-MoO_3 remains unchanged after NO_2 exposure for 3 hours.

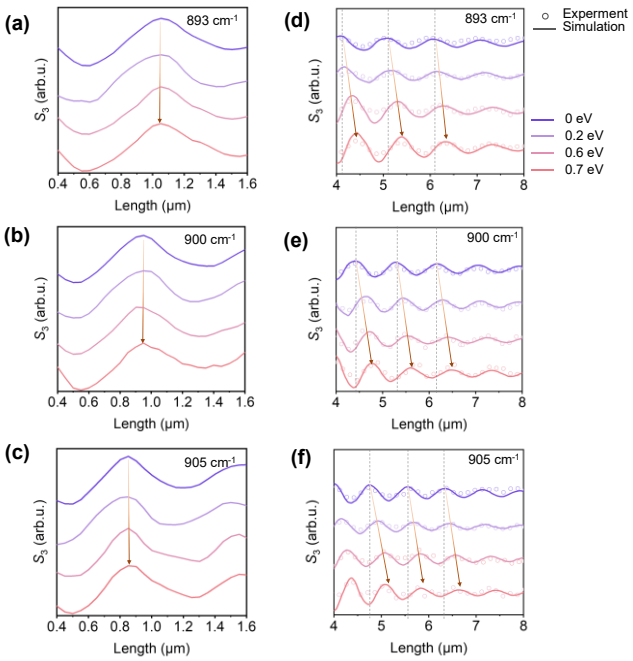

Figure S4. The third-order near-field signals of polaritons extracted from experiments with different Fermi energies at different frequencies along the *x*-direction. (a-c) correspond to the polaritons at the positions of the dark purple dashed lines in Figure 2(d-f). (d-f) correspond to the polaritons at the positions of the purple, pink, and red dashed lines in Figure 2(d-f).

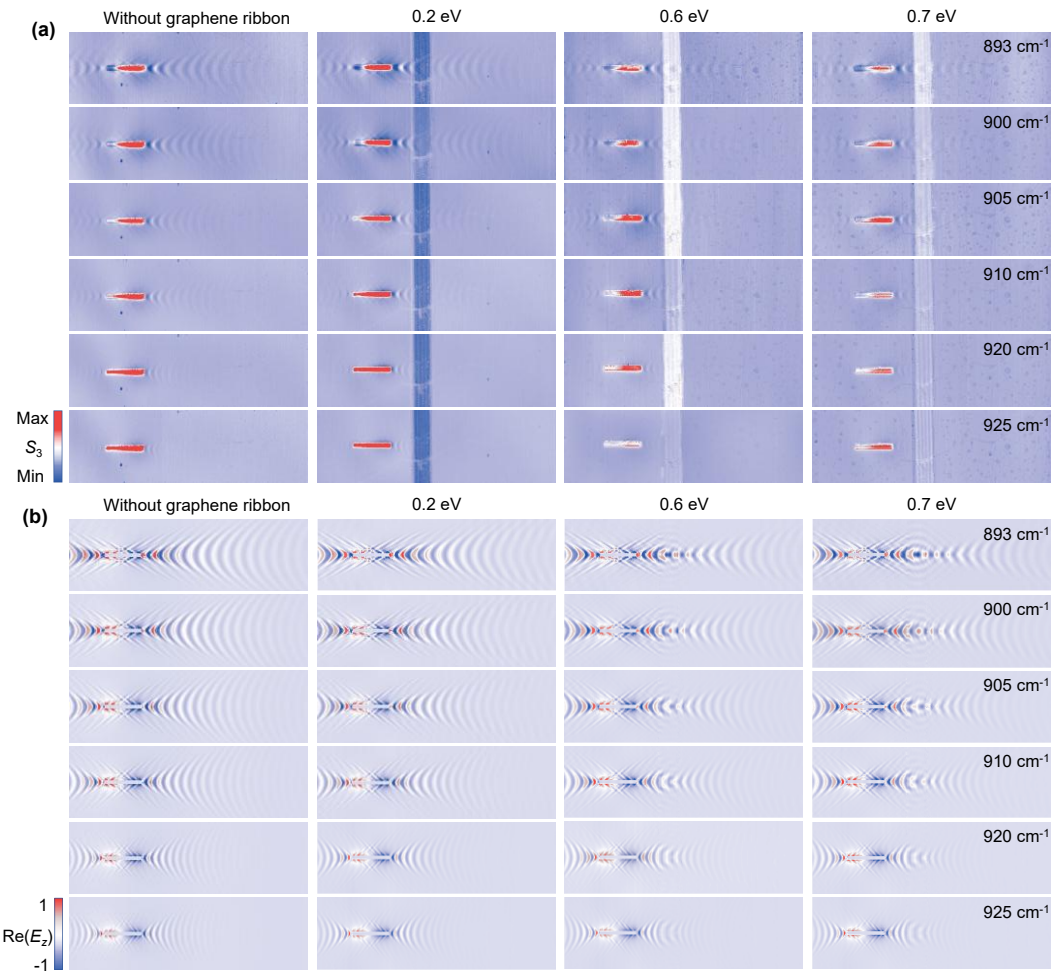

Figure S5. (a) The near-field third-order wavelength signal along the *x*-direction was experimentally measured at different frequencies when the graphene Fermi level was no graphene strip, 0.2 eV, 0.6 eV, and 0.7 eV, respectively. (b) Corresponding numerically simulated electric field intensity distribution (E_z).