

Supporting Information for

Interface-enhanced superconductivity in monolayer 1T'-MoTe₂ on SrTiO₃(001)

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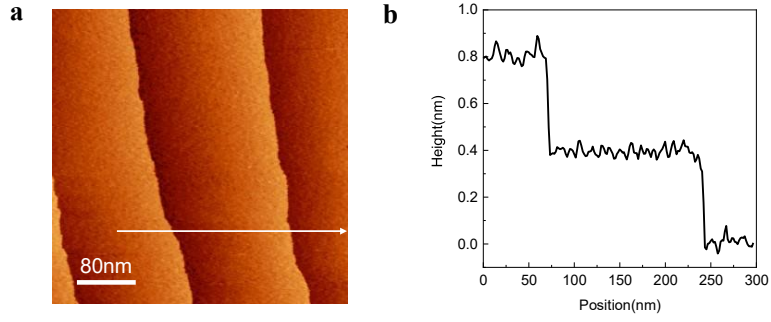


Figure S1 STO substrate after annealing at 950 °C for 1 h. **(a)** A large-scale STM image ($400 \times 400 \text{ nm}^2$, $U = 3 \text{ V}$, $I_t = 30 \text{ pA}$. U , bias voltage, I_t , tunneling current.) of the STO(001) surface with steps. **(b)** Line profile of the white arrow in **(a)**, showing that the height of the STO steps is $\sim 0.4 \text{ nm}$.

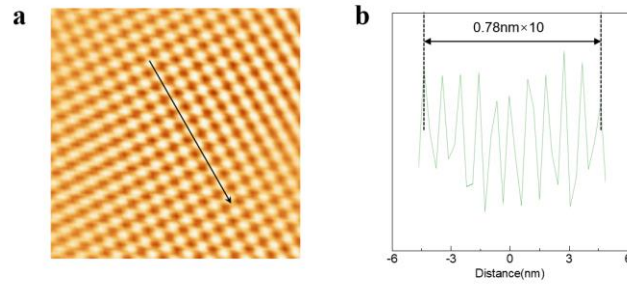


Figure S2 **(a)** The Fourier-filtered STM image. **(b)** Line profile along the black arrow in **(a)**. The distance between adjacent grid points is $\sim 0.78 \text{ nm}$, which is twice the lattice constant ($a_0 \sim 0.39 \text{ nm}$).

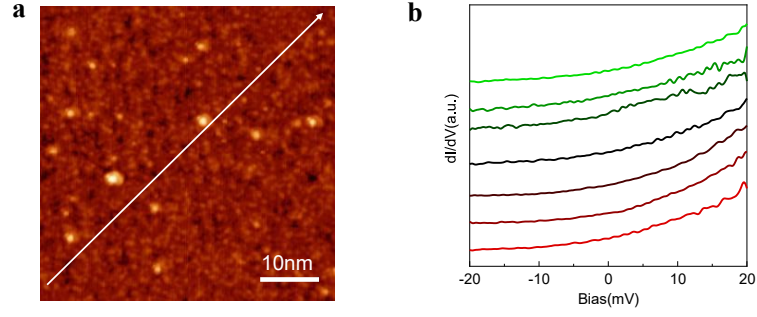


Figure S3 Electronic properties of the STO substrate. **(a)** A small-scale STM image ($50 \times 50 \text{ nm}^2$, $U = 1.5 \text{ V}$, $I_t = 50 \text{ pA}$.) of the STO(001) surface. **(b)** A series of dl/dV spectra taken along the white arrow in (a). These spectra show no gap-like features.

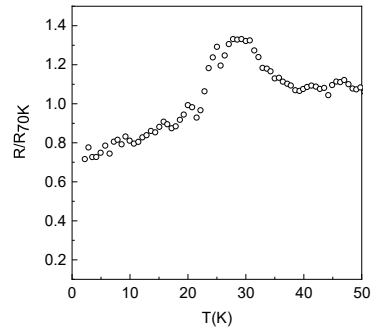


Figure S4 Temperature dependence of the sheet resistance of sample No. 3 (Te/STO).

As the temperature decreases, the resistance change of the sample is small and there is no sudden drop. The transport measurements were performed by using the standard four-probe method.

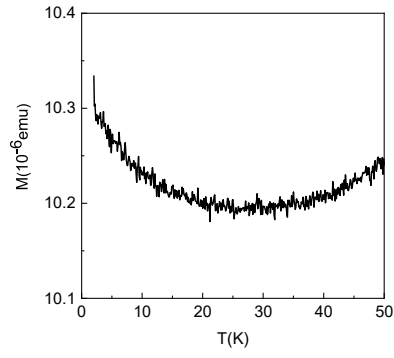


Figure S5 M - T curves of sample No. 4 (Te/STO) measured under a 30 Oe perpendicular magnetic field. As the temperature decreases, the magnetization change of the sample is small and there is no sudden drop.

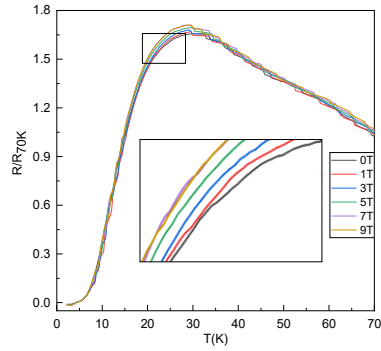


Figure S6 $R(T)$ curves of sample No. 1 at various perpendicular magnetic fields up to 9 T (the magnetic fields from bottom to top are 0, 1, 3, 5, 7, 9 T), showing the upper critical field (H_{c2}) of the MoTe_2 film is very large.