Electronic Supplementary Information

Strong electron-phonon coupling driven charge density wave states in stoichiometric 1T-VS_2 crystals

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Element	line type	k factor	absorption correction	wt%	wt% sigma	atomic %
V	K series	1.1350	1.00	41.04	0.11	32.44
S	K series	0.9804	1.00	58.96	0.18	67.56
Total:				100.00		100.00

Table S1. Elemental composition obtained from Energy-dispersive X-ray spectroscopy (EDX). The atomic ratio of V and S were 32.44% and 67.56%, respectively, indicating V/S = 1/2.08.

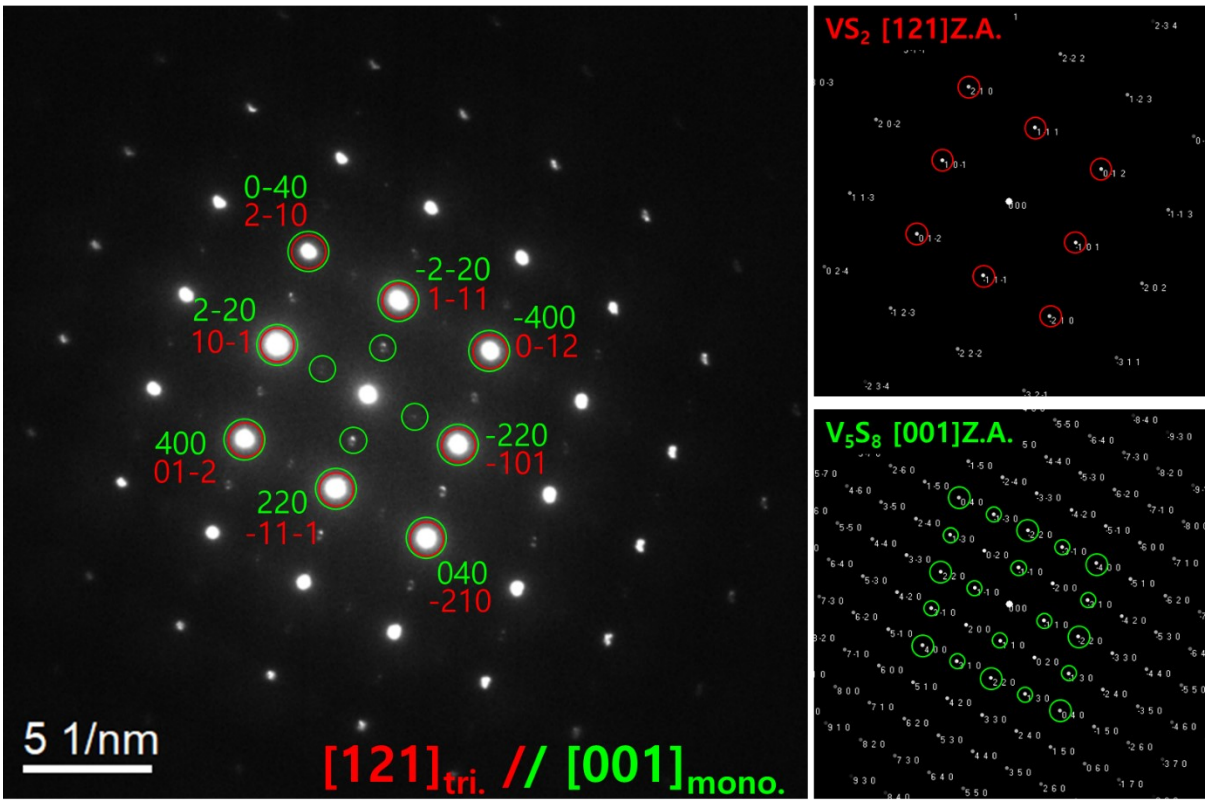

Figure S1. Left panel: Representative selective area electron diffraction (SAED) patterns of as-grown VS_2 bulk crystal before low temperature vacuum annealing treatment. Right panels: Simulated SAED patterns of trigonal VS_2 (top) and monoclinic V_5S_8 (bottom). The lattice planes in the red and green circles are indexed for the trigonal VS_2 (top) and monoclinic V_5S_8, respectively. Note that lattice information of VS_2 and V5S8 are as following: trigonal VS_2 – P_{3m1} space group, a = 3.221 Å, c = 5.755 Å and monoclinic V_5S_8 – $C_{2/m}$ space group, a = 11.399 Å, b = 6.668 Å, c = 7.919 Å, β = 134.4°.

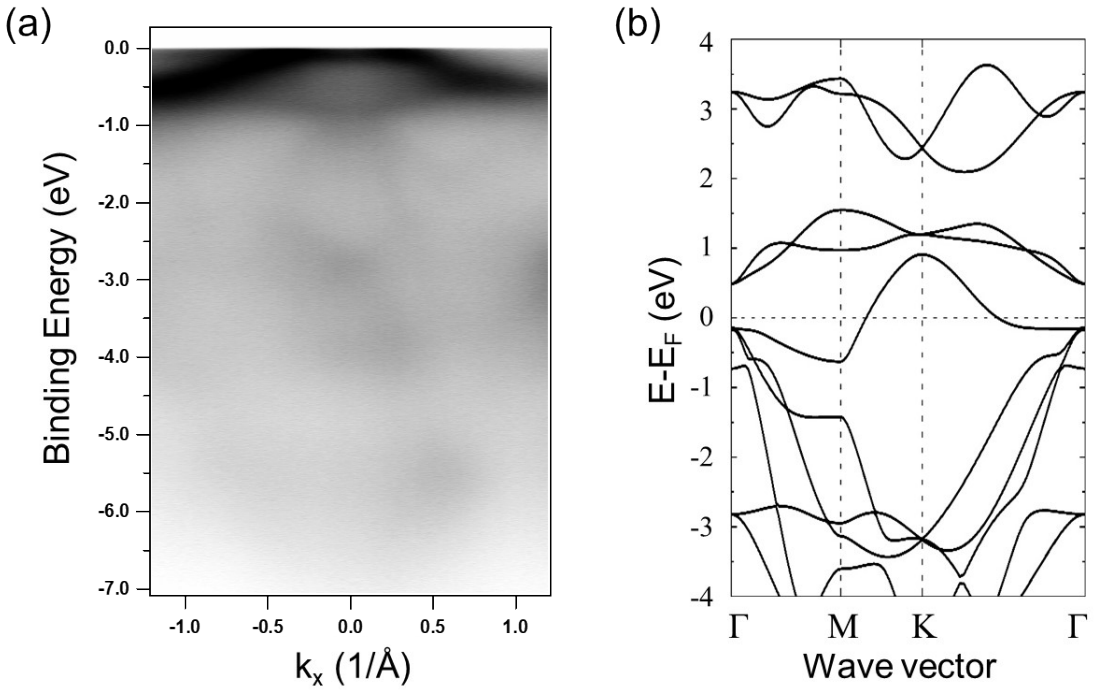

Figure S2. (a) Plot of ARPES intensity for bulk VS_2 along the ΓM ($h\nu$ = 128 eV) direction at 15 K. (b) Electronic band structure obtained from the DFT calculations of bulk VS_2.

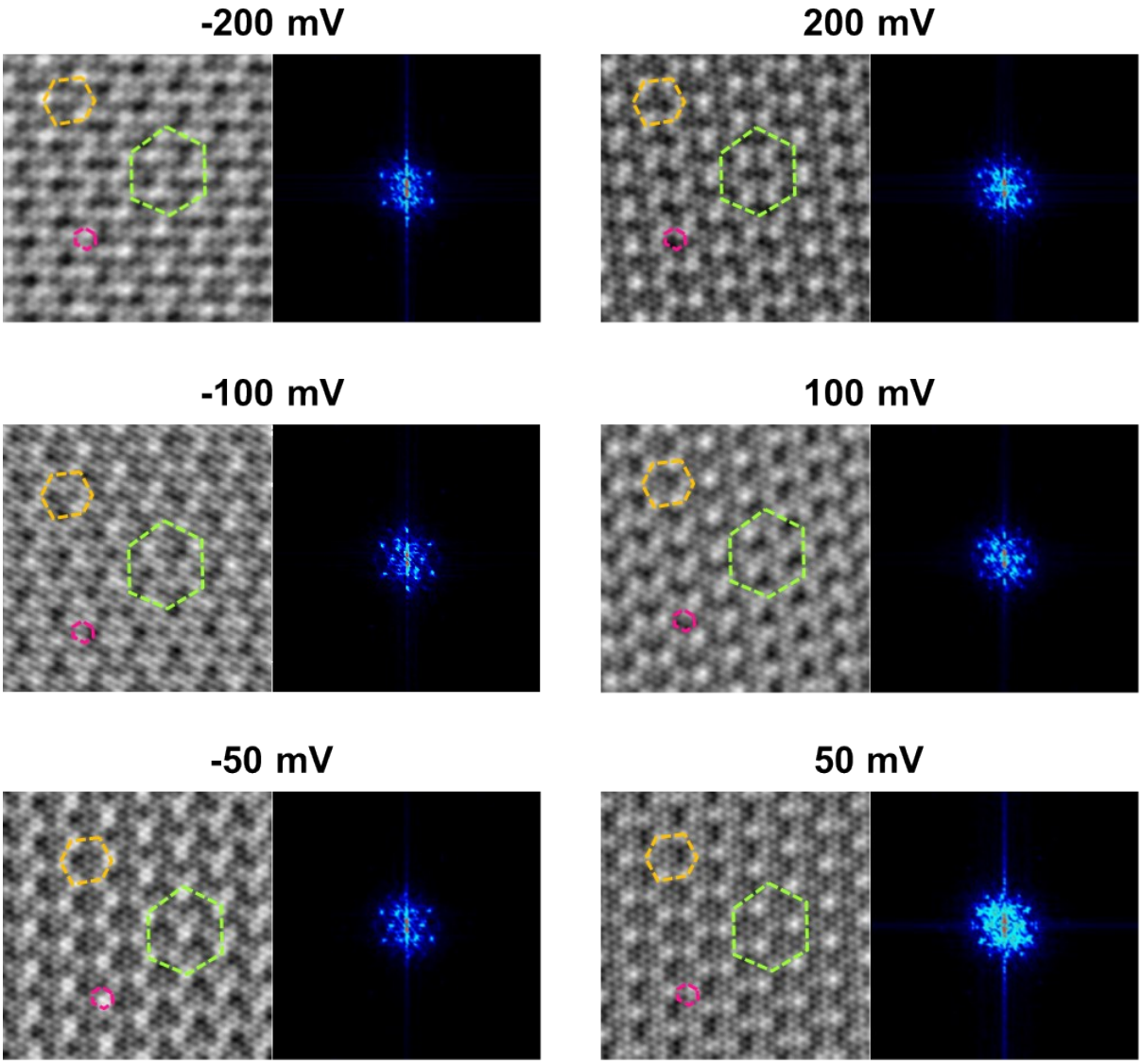

Figure S3. STM topographic and corresponding fast Fourier transform (FFT) images of filled states (-200, -100, and -50 mV) and empty states (50, 100, and 200 mV). Magenta, orange, and green dashed hexagons indicate basis, $\sqrt{6} \times \sqrt{6}$R30°, and 4×4 CDW lattices, respectively.