Supplementary Material for "Concurrent Structural and Electronic Phase Transitions in V_2O_3 Thin Films with Sharp Resistivity Change"

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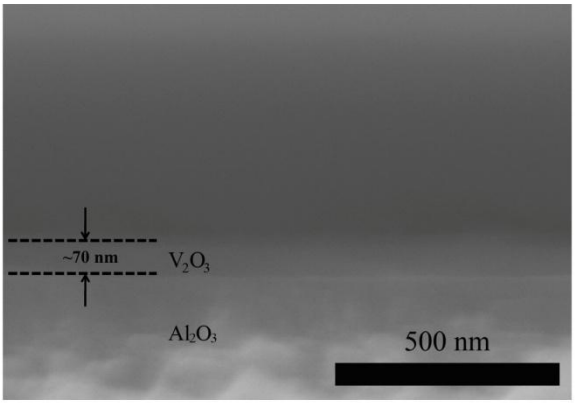

Fig. S1. Cross-section SEM image of V_2O_3 thin film grown on *r*-plane Al_2O_3 substrate.

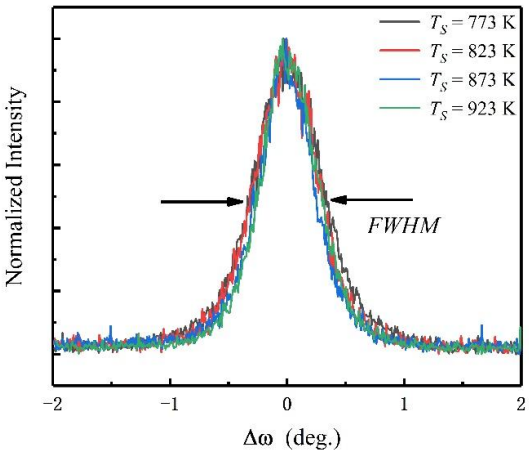

Fig. S2. Rocking curve around the (012) peak for the V_2O_3 thin films.

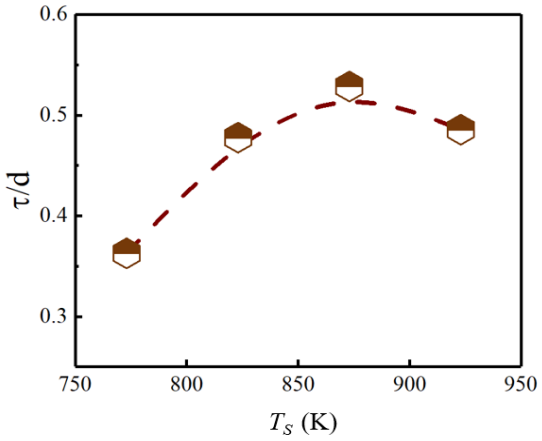

Fig. S3. Ratio of the mean size of the crystalline domains in the vertical direction, τ, to the V_2O_3 film thickness as a function of T_S. The values of τ were determined from the FWHM of the V_2O_3 (012) peak using Scherrer formula.

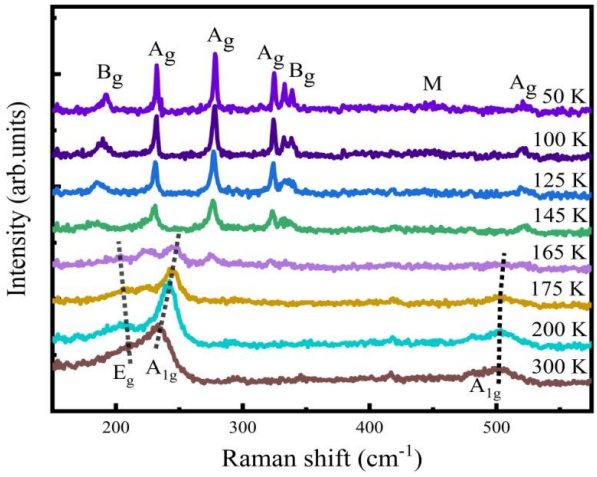

Fig. S4. Temperature dependent Raman spectra of the V_2O_3 thin film (T_S = 923 K) in the warming process.

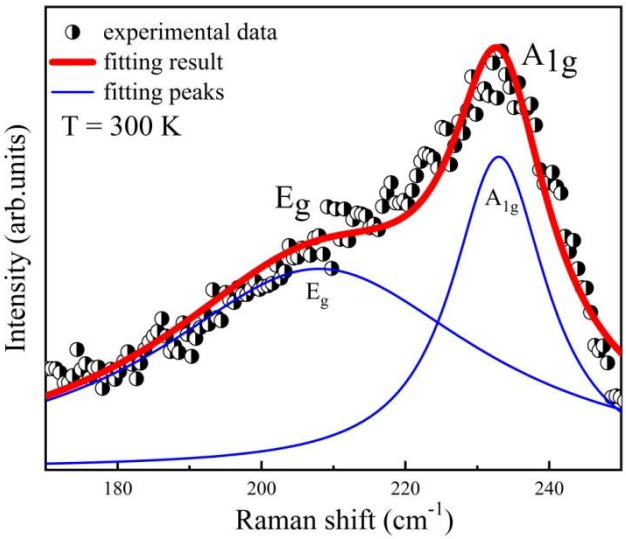

Fig. S5. The decomposition of E_g and A_{1g} modes using Lorentzian fitting.

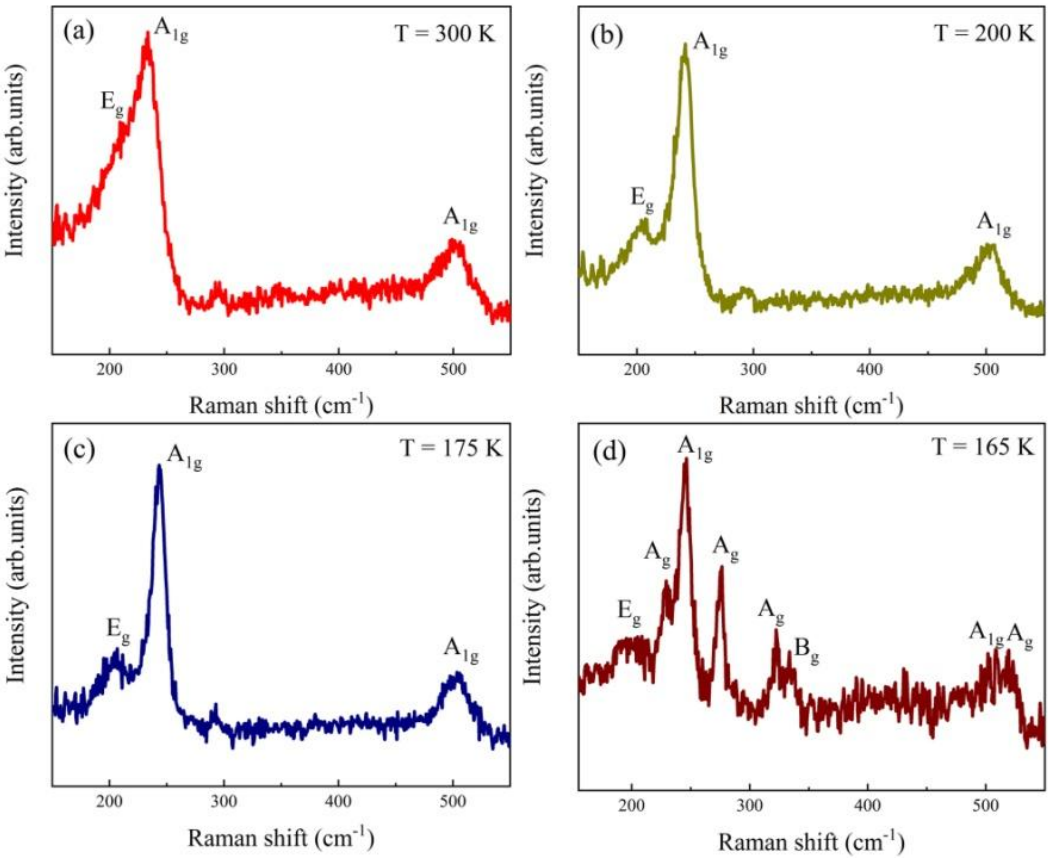

Fig. S6. The enlarged view of Raman spectra at different temperatures.

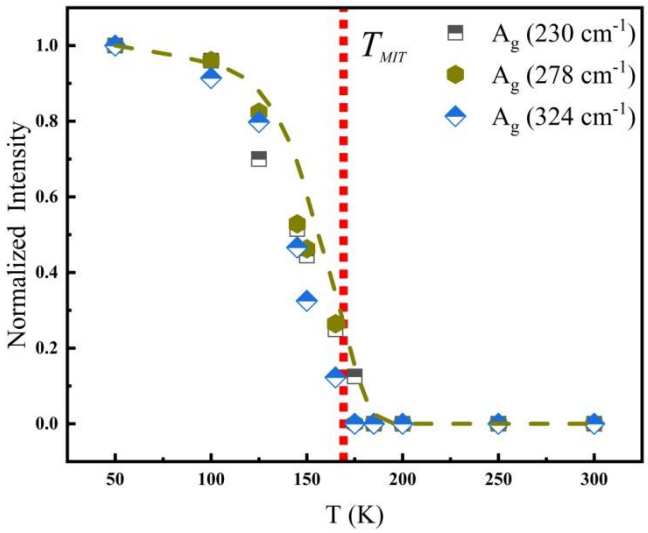

Fig. S7. Normalized intensity of A_g phonon mode at ~230 cm^{-1}, ~278 cm^{-1}, and ~324 cm^{-1} in the V_2O_3 thin film as a function of temperature in the warming process. The dotted lines are guides for the eyes.