

Electronic Supporting Information

Physical Properties Exploration of Highly Oriented V₂O₅ Thin Films Prepared by Electron Beam Evaporation

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Table S1 Frequency assignment for Micro-Raman data

Frequency (cm⁻¹)	Assignment	Modes
285	Bending vibration of V=O bond (d_1)	B _{2g}
305	z direction motion of intra ladder oxygen atoms	A _g
400	Bending vibration of V=O bond (d_1)	A _g
483	Bending vibration of V–O–V bond (d_2) related to the deformation involving displacement of the bridging oxygen atom along the z-direction	B _{2g}
525	Stretching vibration of V-O-V bridging bond (d_4)	A _g
701	Asymmetric bond stretching of V-O-V bridging bond (d_3)	B _{1g}
996	Stretching of vanadium atoms connected to oxygen atoms V=O bond (d_1) (terminal oxygen)	A _g

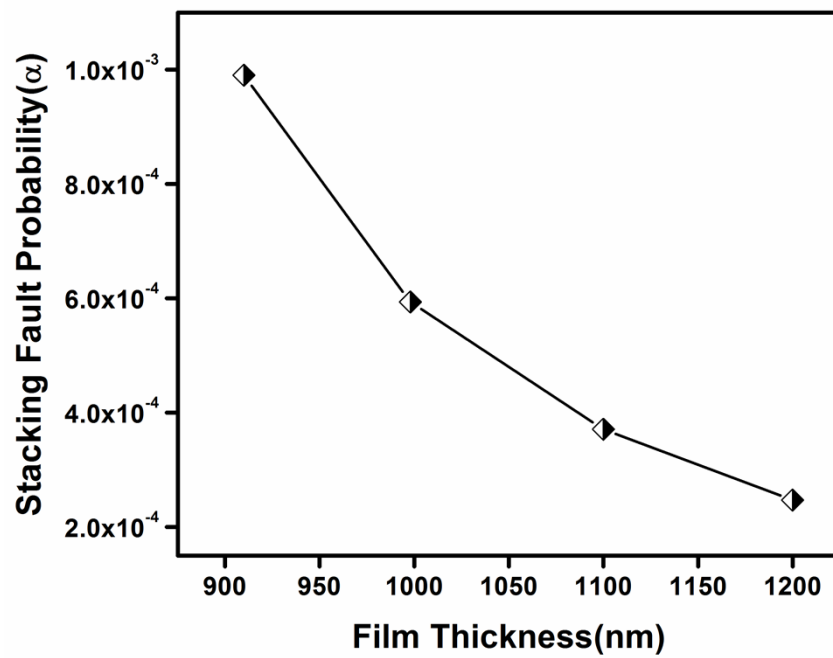


Figure S1. A plot of stacking fault probability of V_2O_5 thin films prepared at various thickness.

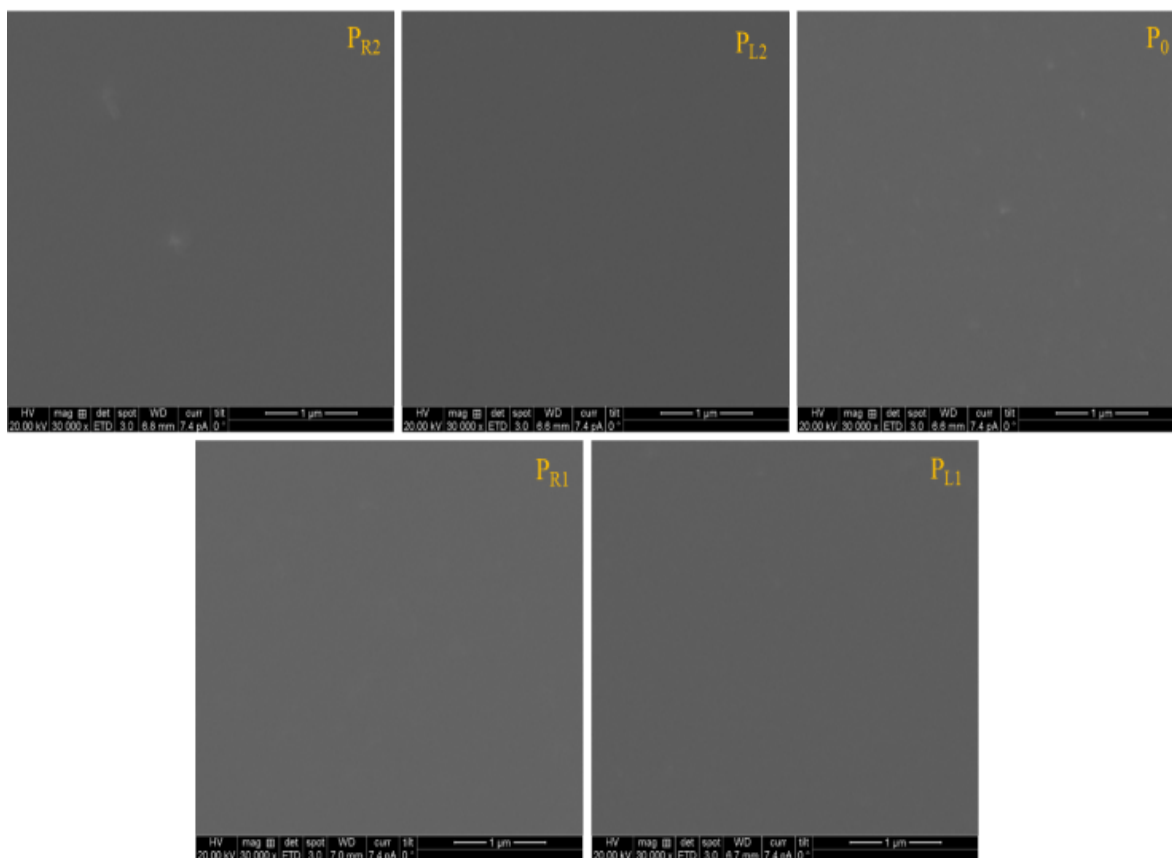


Figure S2. SEM micrographs of V_2O_5 thin films prepared at various thickness by adjusting substrate positions

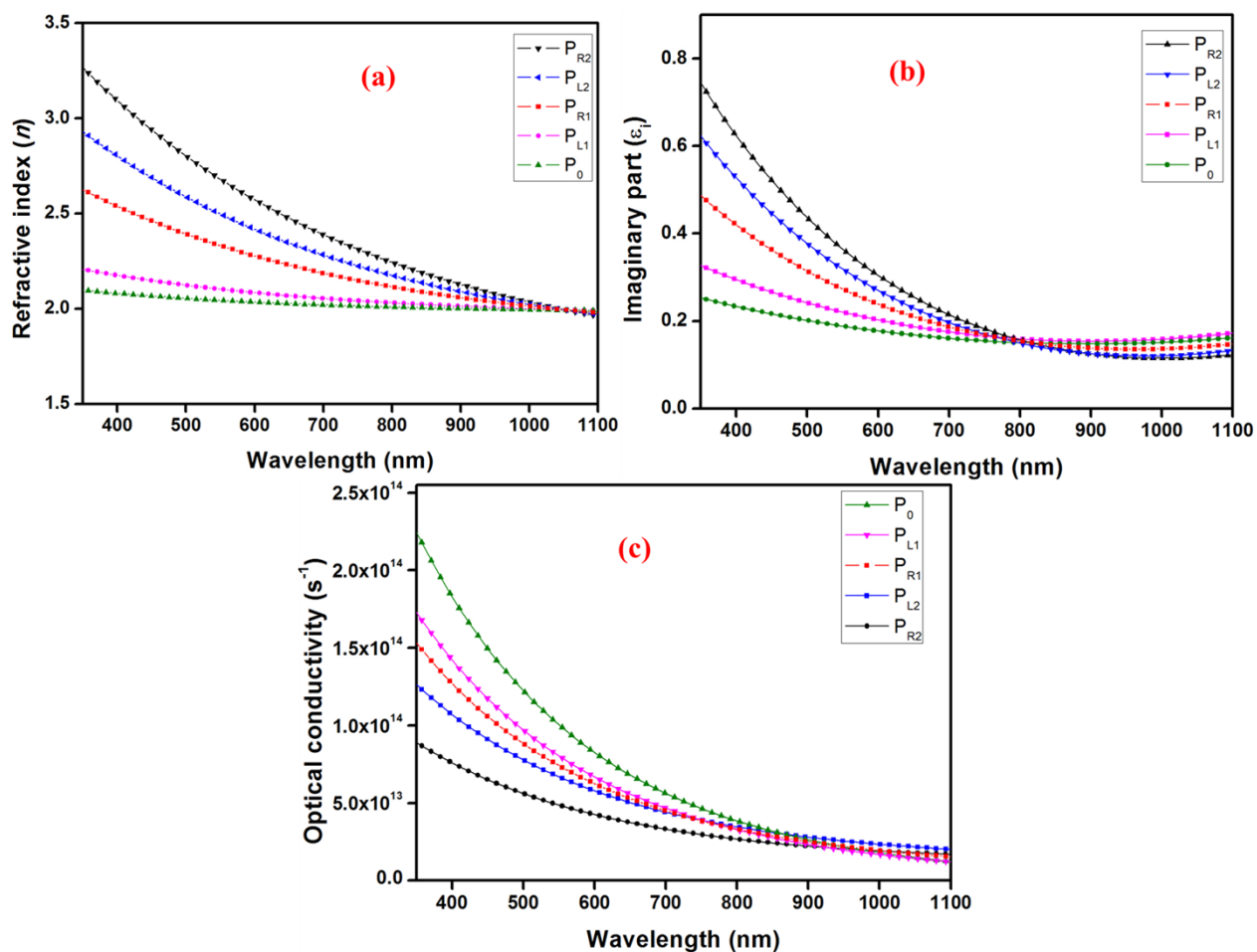


Figure S3. (a&b) The variation of dielectric constant as a function of wavelength of V_2O_5 thin films deposited at different thickness by adjusting substrate positions; **(c)** The estimated optical conductivity variations using refractive index and absorption coefficient values for V_2O_5 thin films.

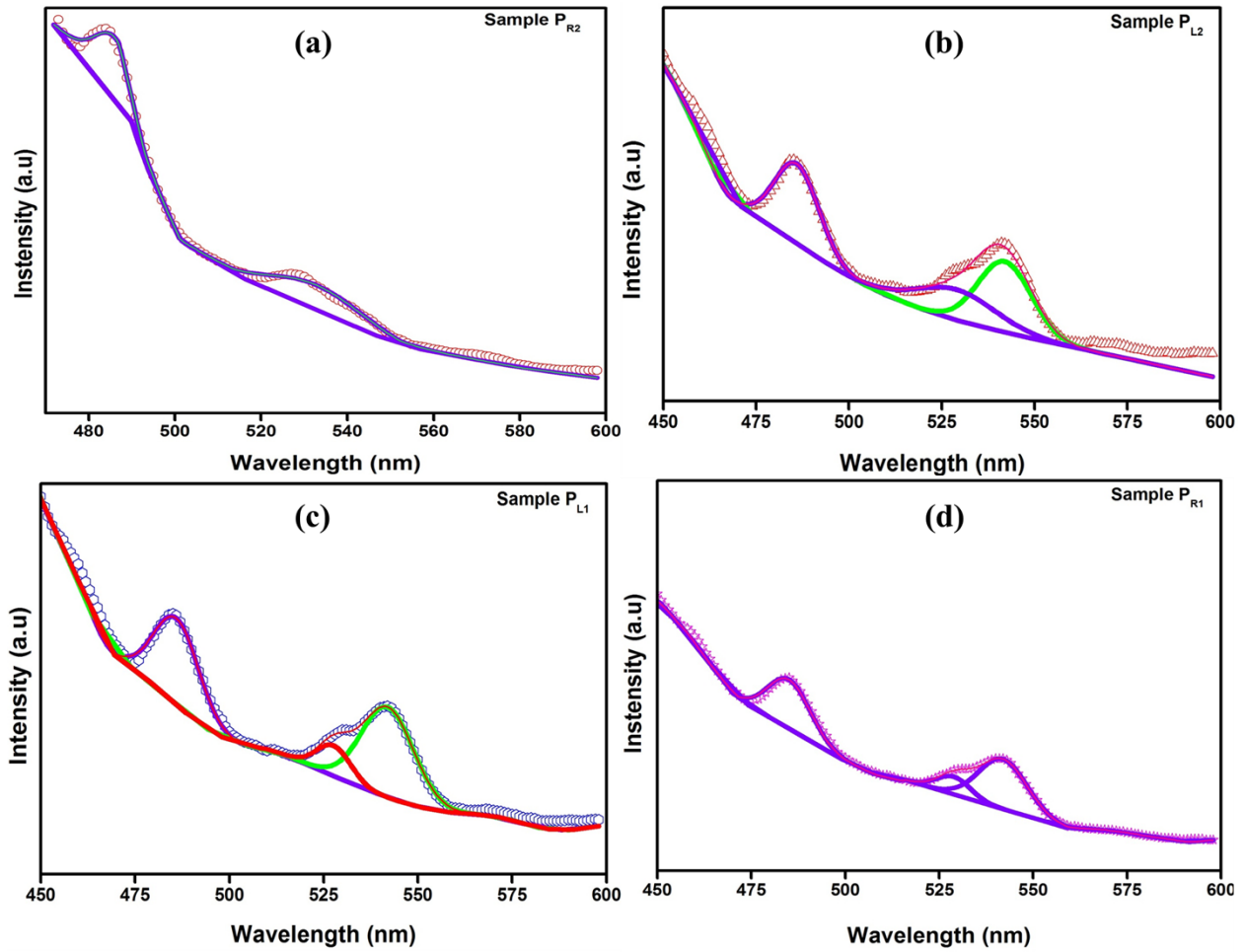


Figure S4. Gaussian resolved PL spectra of V_2O_5 thin films deposited at different thickness by adjusting substrate positions (a) P_{R2} ; (b) P_{L2} ; (c) P_{L1} and (d) P_{R1} .