Supporting Information

Bidirectional tuning of phase transition properties in Pt: VO_2 nanocomposite thin films

*Zihao He[a], Jie Jian[b], Shikhar Misra[b], Xingyao Gao[b], Xuejing Wang[b], Zhimin Qi[b], Bo Yang[b], Di Zhang[b], Xinghang Zhang[b], Haiyan Wang[a,b]**

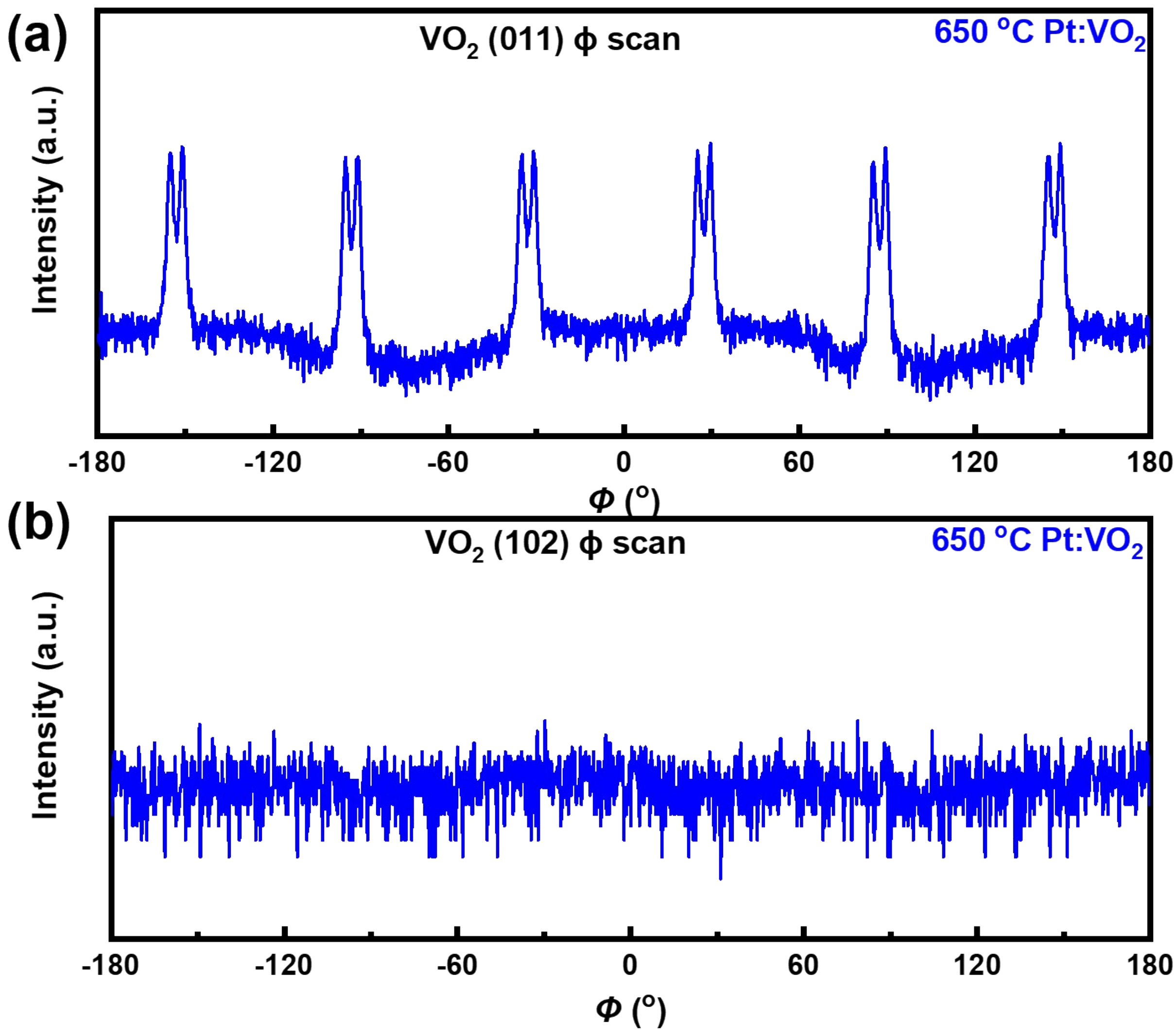

Figure S1. XRD ϕ-scans of (a) (011) plane and (b) (102) plane of Pt: VO_2 nanocomposite thin film deposited at 650 ˚C.

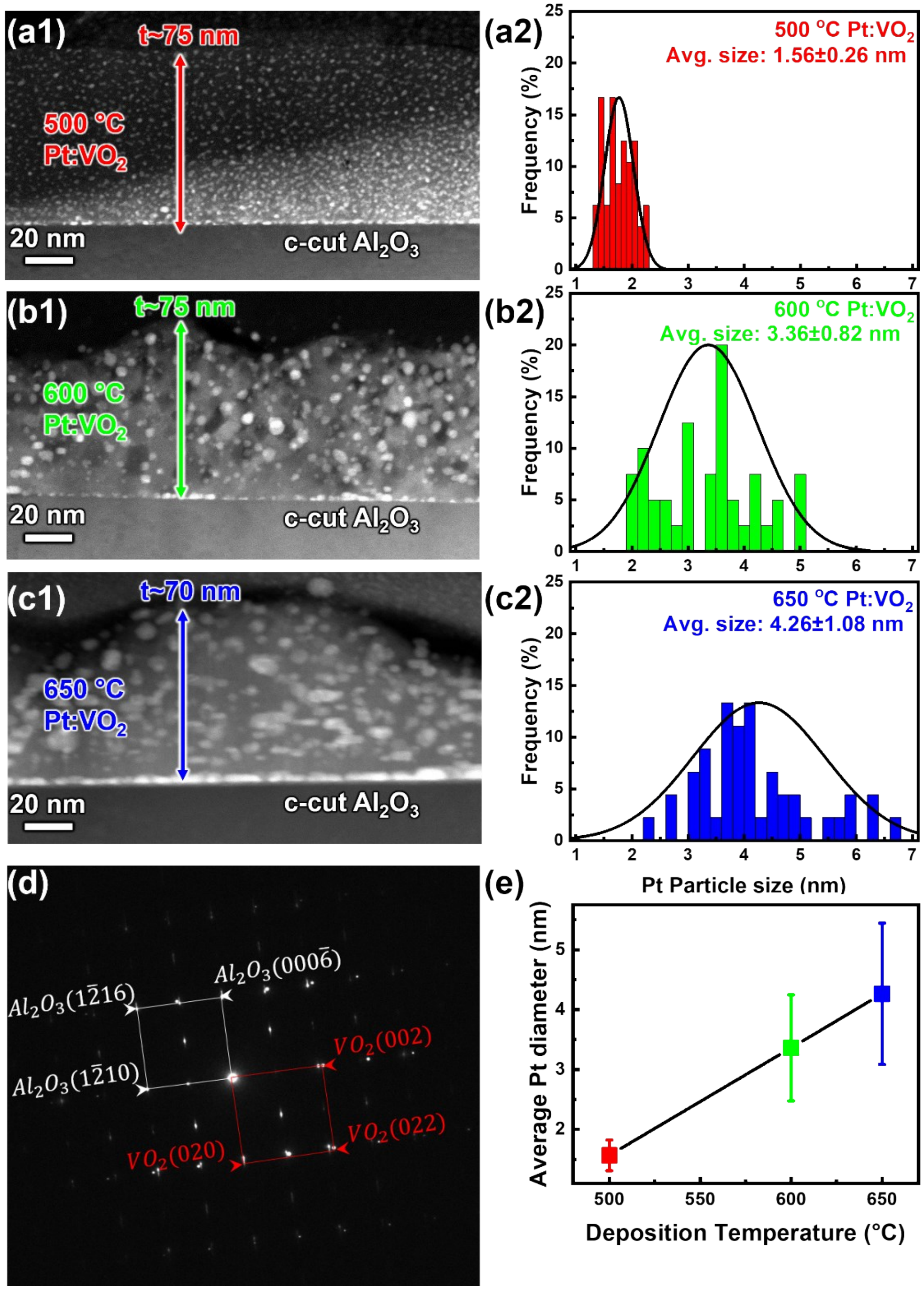

Figure S2. (a1, b1, c1) STEM cross-section images of the Pt: VO_2 nanocomposite thin films deposited at 500, 600, and 650 ˚C, respectively. (a2, b2, c2) The corresponding Pt NPs size distributions in all Pt: VO_2 nanocomposite thin films. (d) SAED pattern of the film and the substrate along the c-cut sapphire $[10\bar{1}0]$ zone for the 500 ˚C deposited Pt: VO_2 films. (e)

Relationship between average Pt NP size and the corresponding deposition temperatures. Average Pt NP size becomes larger at higher deposition temperature.

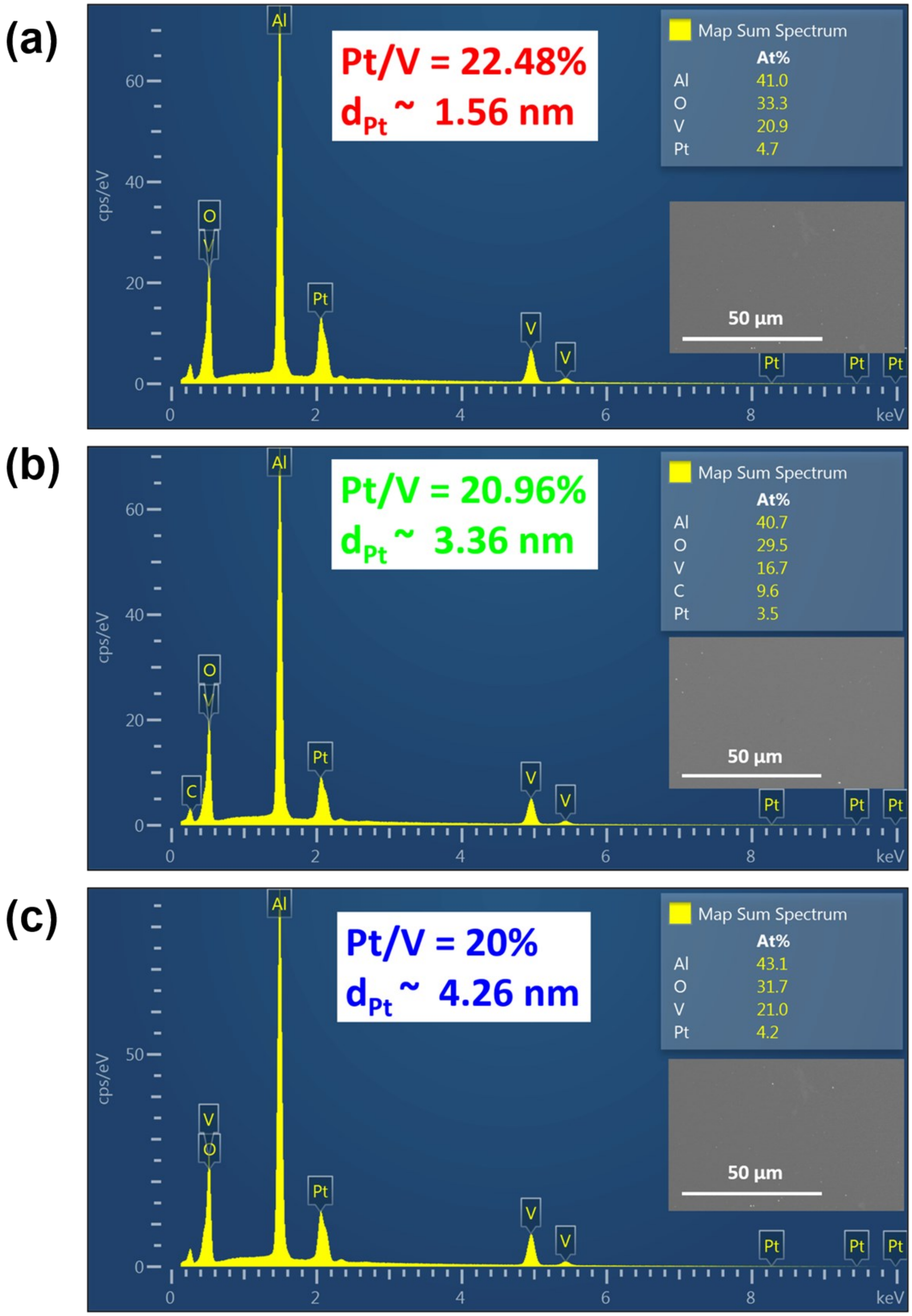

Figure S3. SEM-EDS mapping of the Pt/V atomic ratio in the Pt: VO_2 nanocomposite thin films with the average Pt NP diameter of (a) 1.56 nm, (b) 3.36 nm, and (c) 4.26 nm. The Pt/V atomic ratio is similar for all films.

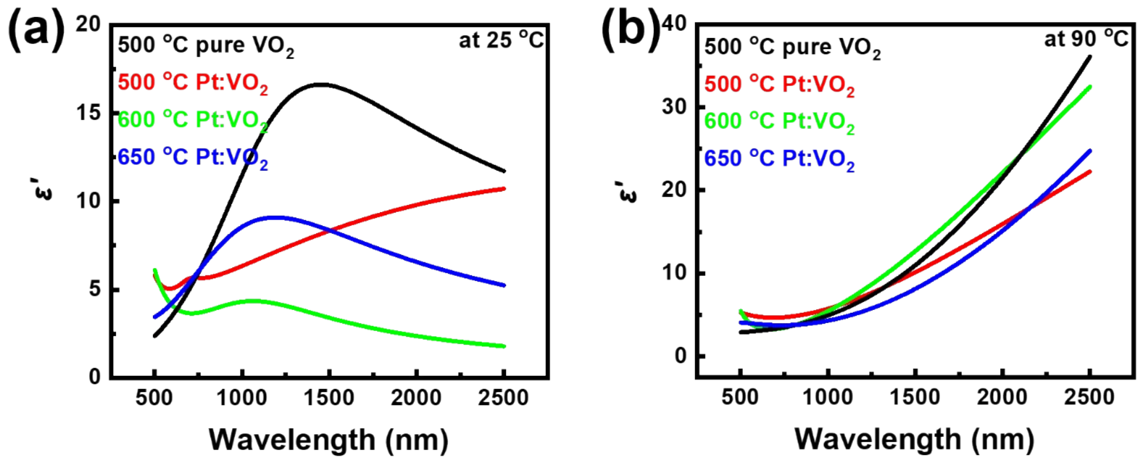

Figure S4. The imaginary part of dielectric permittivity ε' (a) at 25 °C and (b) at 90 °C for Pt: VO_2 nanocomposite thin films deposited at 500, 600, and 650 ˚C, respectively.