

Supplementary Information for

Growth of vanadium dioxide thin films on hexagonal boron nitride flakes as transferrable substrates

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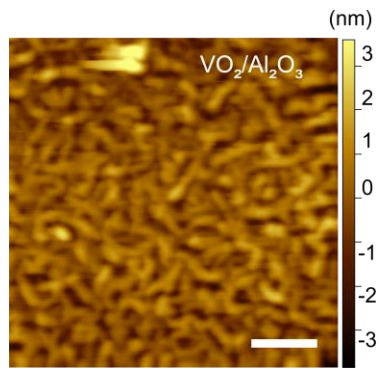


Figure S1. AFM image of VO₂ grown on Al₂O₃(0001) by PLD, showing the formation of the nanometer-scale grains. The scale bar is 200 nm. The grain size is estimated to be 20-30 nm in length.

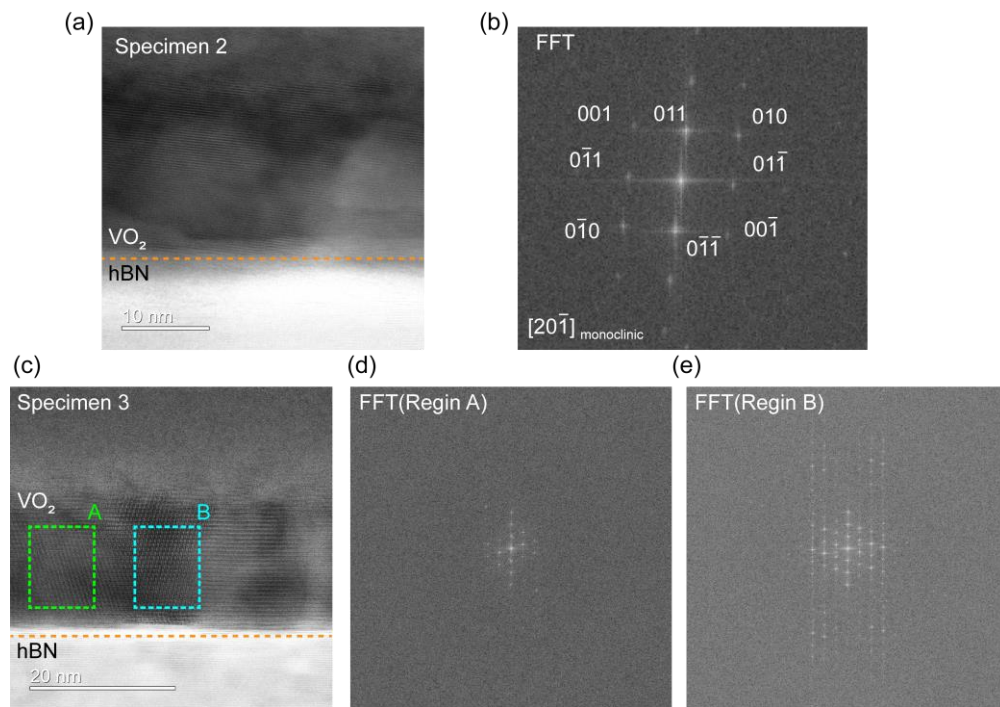


Figure S2. (a) Cross-sectional STEM image of the VO₂/hBN stack and (b) the FFT image extracted from the entire VO₂ region. The VO₂ film is observed to be oriented along the [110] direction of the rutile structure. The STEM image can be identified to be the projection of the [001] direction of the rutile structure, corresponding to the [20 $\bar{1}$] projection of the monoclinic structure. (c) Cross-sectional STEM image of the VO₂/hBN stack obtained from the different specimen from one in (a). (d and e) FFT images obtained from the regions surrounded by the dashed green (Region A) and light-blue (Region B) lines the STEM image in (c). The Moiré patterns are clearly observed in the regions A and B.

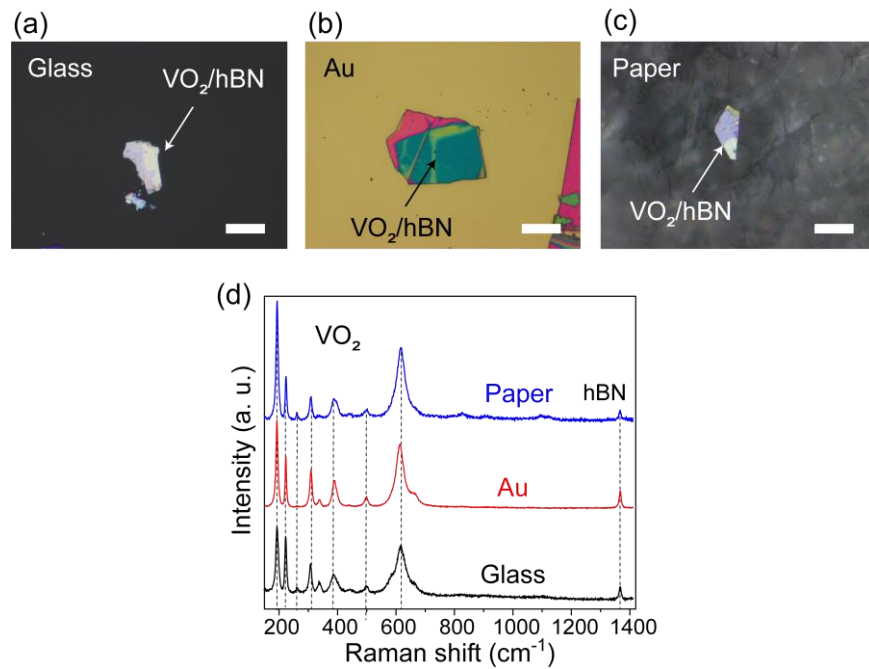


Figure S3. Optical images of the VO₂/hBN stacks transferred onto (a) a glass slide, (b) a gold (Au) film, and (c) a weighing paper. The scale bars are 10 μm. (d) Raman spectra of the stacks on the glass slide (black curve), Au (red curve), and the paper (blue curve). The prominent peaks of VO₂ are observed for all the samples, suggesting that the crystallinity of the VO₂ films are retained after the transfer process.