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## **Chemical synthesis of high quality epitaxial vanadium dioxide films with sharp electrical and optical switch properties**

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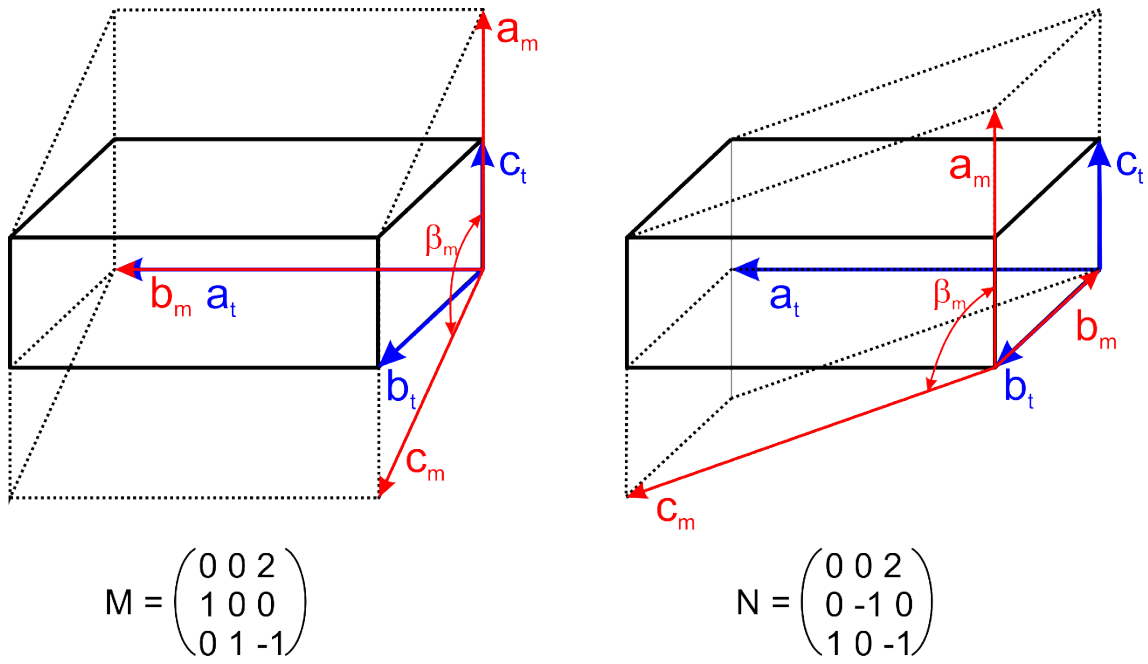


Fig. S1. The two variants of transition from tetragonal VO<sub>2</sub>(R) (solid lines) to monoclinic VO<sub>2</sub>(M) (dashed lines) crystal cells. The transition matrixes are marked as “M” and “N”.

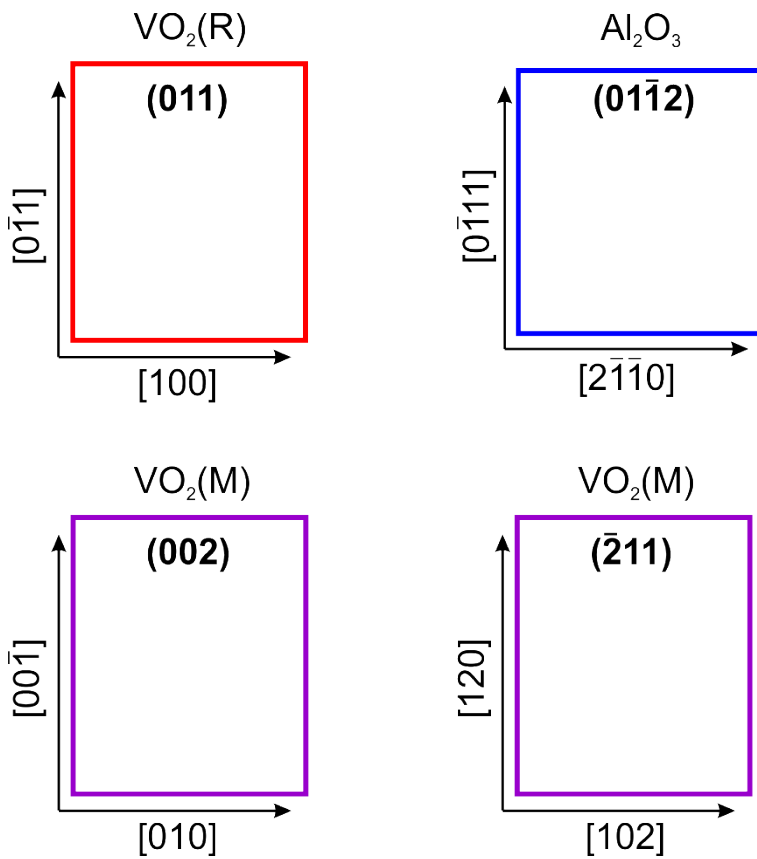


Fig. S2. The epitaxial growth of VO<sub>2</sub>(R) and VO<sub>2</sub>(M) (two variants) films on r-Al<sub>2</sub>O<sub>3</sub> substrate.