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Field effect transistor of thin anatase fabricated through solid state transformation of titania nanosheet

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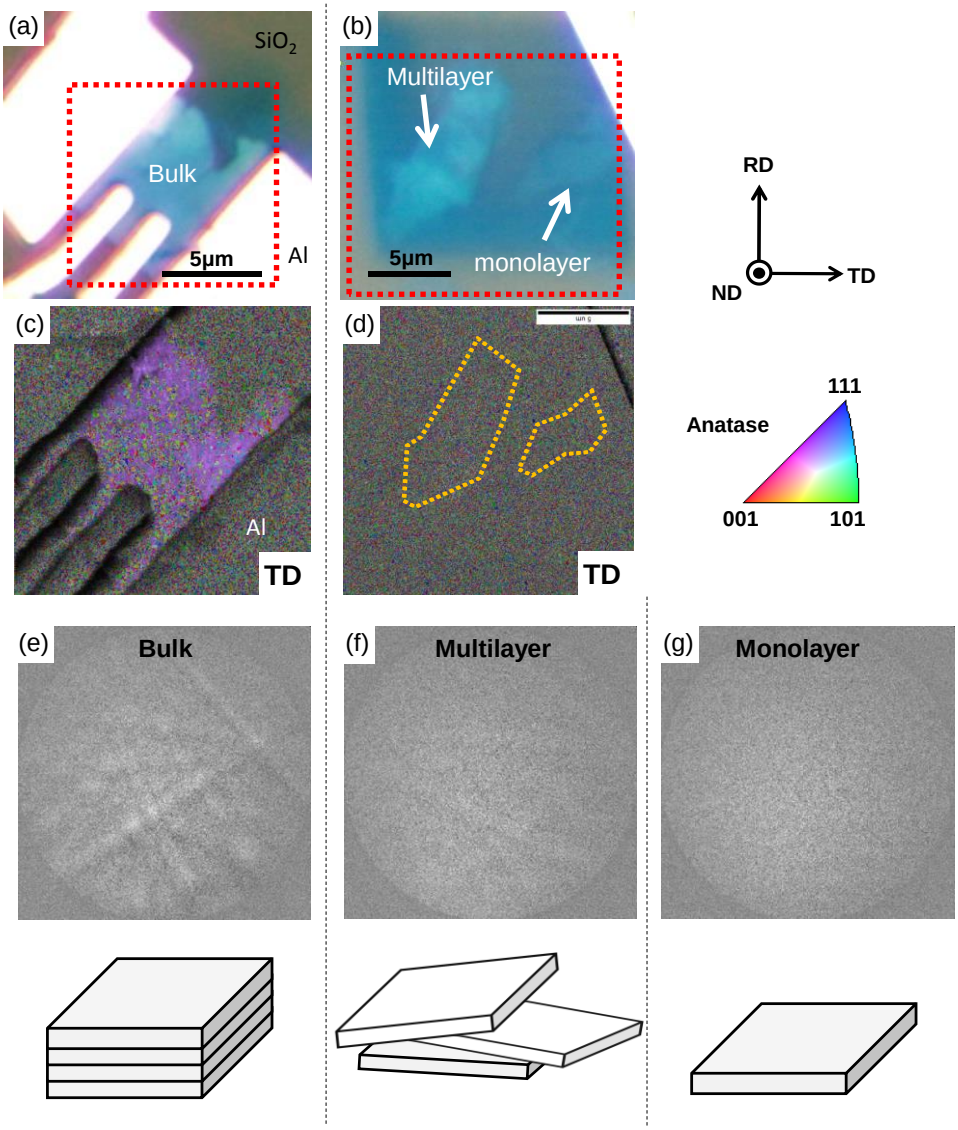

Fig. S1. EBSD analysis for three kinds of anatase samples. (a,b) Optical micrograph of three kinds of anatase samples. (c,d) EBSD orientation maps of the transverse direction (TD) are colored using the inverse pole figure triangle. (e-g) Kikuchi patterns observed

at an arbitrary point of samples. The same Kikuchi pattern can be seen for different positions for bulk anatase sample, while the different Kikuchi patterns are observed for multilayer anatase sample. For monolayer, Kikuchi pattern is not evident.

Based on this EBSD analysis, "Bulk" is single crystalline nature, because each $Ti_{0.87}O_2$ nanosheet is stacked with retaining the crystal orientation (actually, $Ti_{0.87}O_2$ nanosheet was not exfoliated in the $Ti_{0.87}O_2$/TBA suspension.) "Multilayer" is the sample in which $Ti_{0.87}O_2$ nanosheets are randomly laminated without crystal orientation matching. Therefore, "multilayer" shows the polycrystalline nature from EBSP data. In the present definition for "multilayer" and "bulk", the layer number is not taken into consideration. However, the thickness for bulk (~10-15 nm) is generally thicker than that for multilayer (~3-10 nm).