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【218】 Bulk-terminated SrTiO₃(001) studied at the atomic scale with nc-AFM

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SrTiO₃(001), a prototypical perovskite oxide surface, is a promising candidate for all-oxide electronics. Atomic configuration of a bare surface is commonly assumed to be bulk-terminated (1×1), which is far from warranted –noncontact atomic force microscopy (nc-AFM) reveals that only through ferroelectricity-assisted cleaving in ultrahigh vacuum [1], a (1×1) SrTiO₃(001) closest to the pristine can be obtained [2]. Both surface terminations appear as two domains of opposite polarization. This provides dichotomous selectivity for applications, as these domains behave differently under UV illumination: while metallic TiO₂ surface is unaffected, SrO termination traps excess positive charge.

[1] I. Sokolović et al. PRM 3,034407(2019)

[2] I. Sokolović et al. PRB, in print(2021)

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