

Supporting Information

Anomalous Dielectric Behaviour at the Monoclinic to Tetragonal Phase Transition in $\text{La}(\text{Nb}_{0.9}\text{V}_{0.1})\text{O}_4$

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Fig. S1a shows a diffraction contrast transmission electron micrograph (TEM) of a grain of monoclinic $\text{La}(\text{Nb}_{0.9}\text{V}_{0.1})\text{O}_4$ at room temperature which exhibits a ferroelastic domain structure with widths from 20 to 50 nm, similar to that of pure LaNbO_4 .¹ Fig. S1b-d show high resolution transmission electron microscopy (HRTEM) images and inset selected area electron diffraction patterns (SAED) from $\text{La}(\text{Nb}_{0.9}\text{V}_{0.1})\text{O}_4$ ceramics recorded along the $[012]$, $[010]$ and $[21\bar{4}]$ zone axes, respectively. The crystal plane spacing in the SAED patterns is consistent with that in the HRTEM images, and agrees well with the refined lattice parameters of $\text{La}(\text{Nb}_{0.9}\text{V}_{0.1})\text{O}_4$ sample at room temperature. The results of XRD, HRTEM and SAED patterns are therefore, in good agreement, confirming that the $\text{La}(\text{Nb}_{0.9}\text{V}_{0.1})\text{O}_4$ ceramics at room temperature are monoclinic with a space group $I2/c$ (No. 15).

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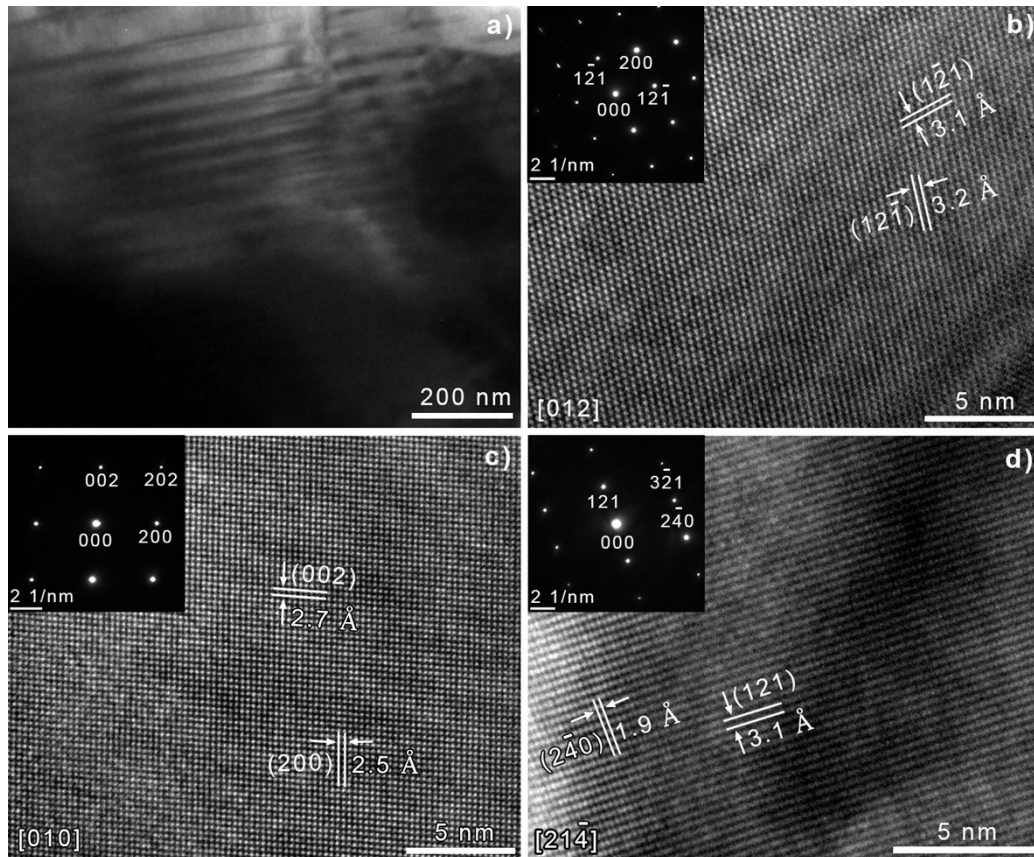


Fig. S1. (a) Diffraction contrast TEM image of ferroelastic domains of La(Nb_{0.9}V_{0.1})O₄ at room temperature. (b-d) HRTEM image and the corresponding SAED of La(Nb_{0.9}V_{0.1})O₄ ceramic viewed along the [012], [010] and [21 $\bar{4}$] zone axes at room temperature, respectively.

Reference

- 1 L. Jian and C. M. Wayman, Domain boundary and domain switching in a ceramic rare-earth orthoniobate LaNbO₄, *J. Am. Ceram. Soc.*, 1996, **79**, 1642-1648.