Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

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Domain Boundary Structures in Lanthanum Lithium Titanates

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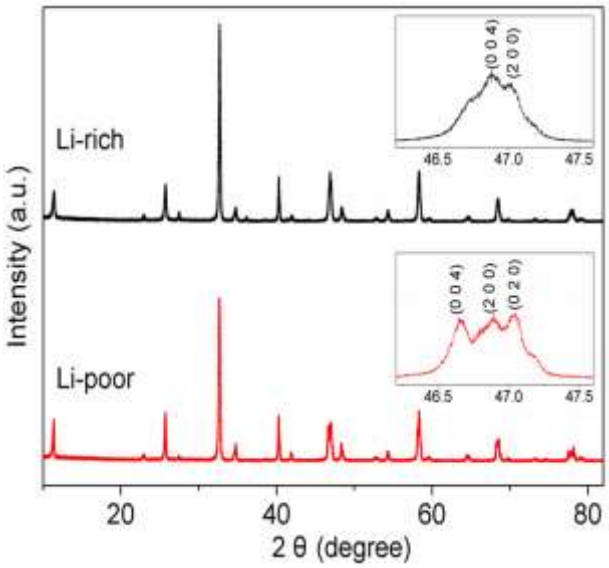

Figure S1. XRD patterns for the Li-poor ($La_{0.62}Li_{0.16}TiO_3$) and Li-rich ($La_{0.56}Li_{0.33}TiO_3$) samples, with splitting of the (200) peaks shown in the insets.

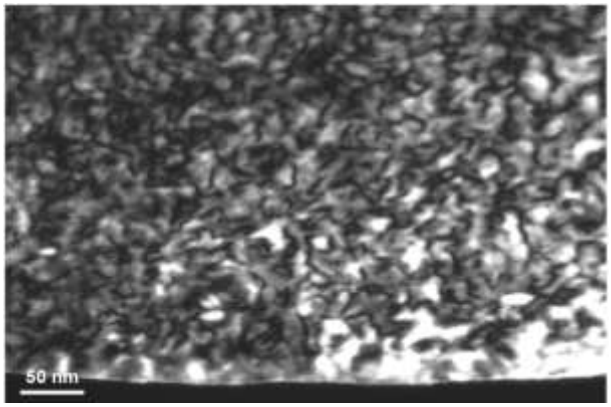

Figure S2. A two-beam image of the small microdomains of various orientations in the Li-rich sample showing that distinct DBs cannot be visualized as clearly at low magnification as in the Li-poor sample.

Table S1. Lattice mismatch (*f*) calculated from the lattice parameters determined by XRD at 90° DBs in both Li-poor and Li-rich LLTO compounds.

Interface relation	*f* (%) (lattice relation)	
	Li-poor	Li-rich
$(010)_P/(001)_P$	**0** (a_I/a_{II})	**0** $(2a_I/2a_{II})$
	0.36 (b_I/c_{II})	**0.04** $(2b_I/c_{II})$
$(100)_P/(001)_P$	**0.22** (a_I/b_{II})	**0** $(2a_I/2b_{II})$
	0.59 (a_I/c_{II})	**0.04** $(2a_I/c_{II})$

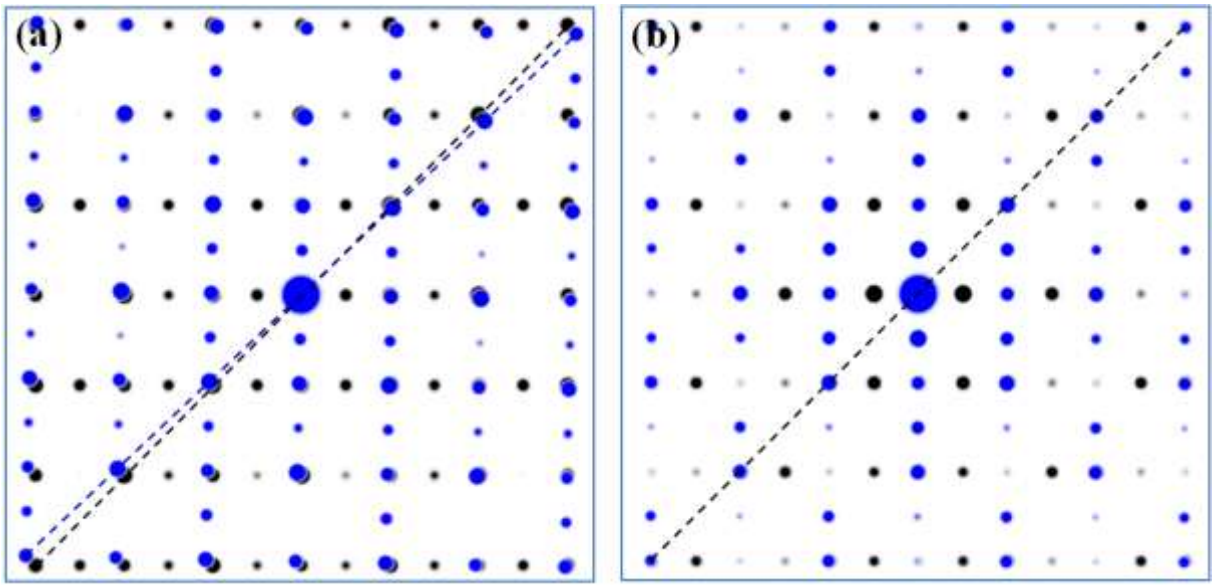

Figure S3. Simulated SAED patterns for two crystal domains inclined at 1.1° and 0.2° with respect to each other to form a nominally 90° DB in (a) Li-poor and (b) Li-rich LLTO compounds. Reflection splitting is highlighted by the mismatch between dashed lines in (a).