# SUPPLEMENTARY MATERIAL TO:
# A low-temperature route for producing epitaxial perovskite superlattices on (001)-oriented $SrTiO_3$/Si substrates

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An analysis of the $(BaTiO_3)_m/(SrTiO_3)_n$ superlattice structure peaks reveals a systematic change of the superlattice repeat unit thickness with a change in the deposition sequence. The slope for an increasing number of $BaTiO_3$-layers from $m/n$ = 1/5, 3/5 to 5/5 ($BaTiO_3/SrTiO_3$ cycles), and vice versa for the $SrTiO_3$-layers reveals slopes of 4.08 nm and 3.89 nm, respectively, which are both close to the expected unit cell thicknesses of the individual constituents (see Fig. S1). This observation indicates a minor intermixing of Ba and Sr in the individual layers.

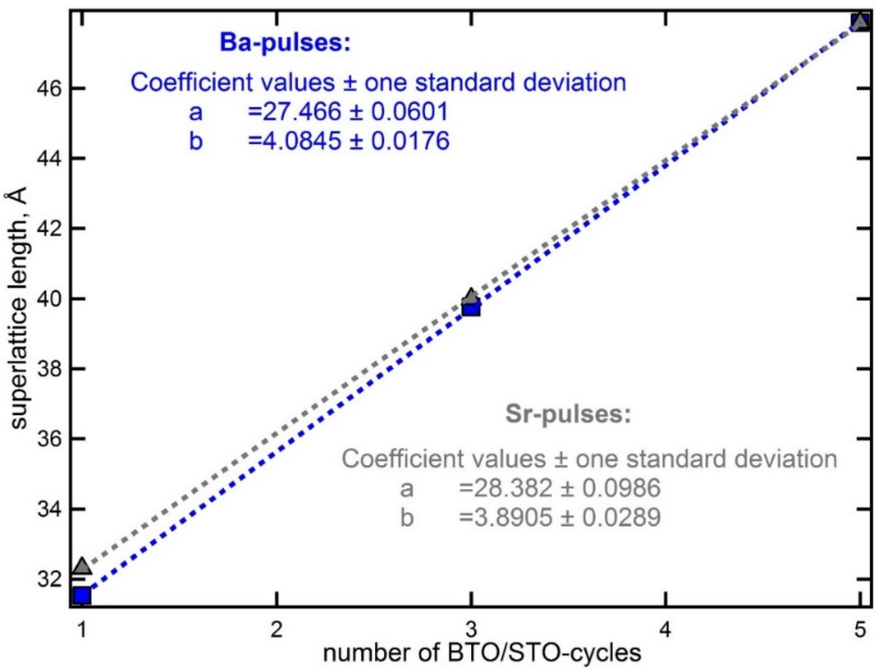


**Figure S1.** Superlattice structure repeat unit thickness as a function of increasing $BaTiO_3$ or $SrTiO_3$ cycles for a constant number of 5 repeat cycles for the other constituent.

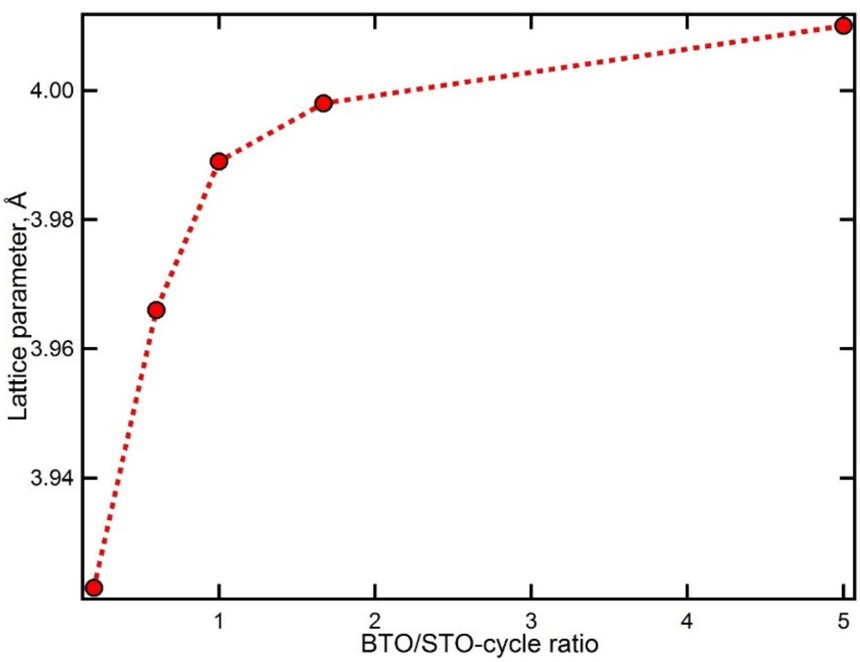


**Figure S2.** The average *c*-lattice parameters of the superlattices obtained from XRD data as a function of increasing $BaTiO_3/SrTiO_3$-cycle ratio.

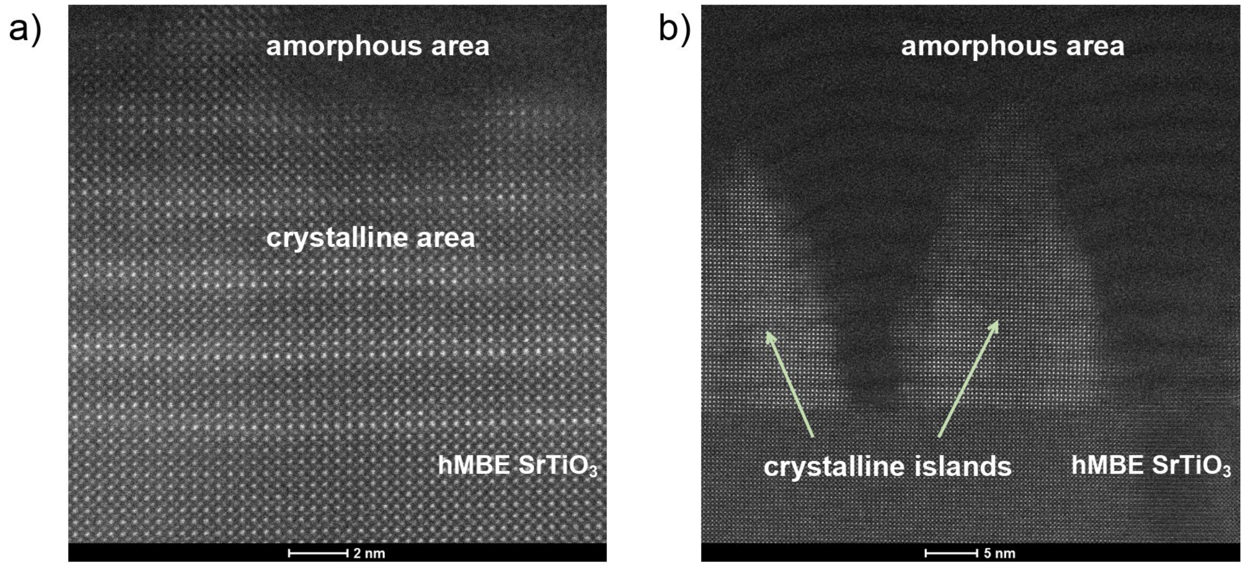


**Figure S3**. HAADF STEM images of **a)** $(BaTiO_3)_1/(SrTiO_3)_5$ and **b)** $(BaTiO_3)_5/(SrTiO_3)_1$ superlattices with a total number of 10 repeats.

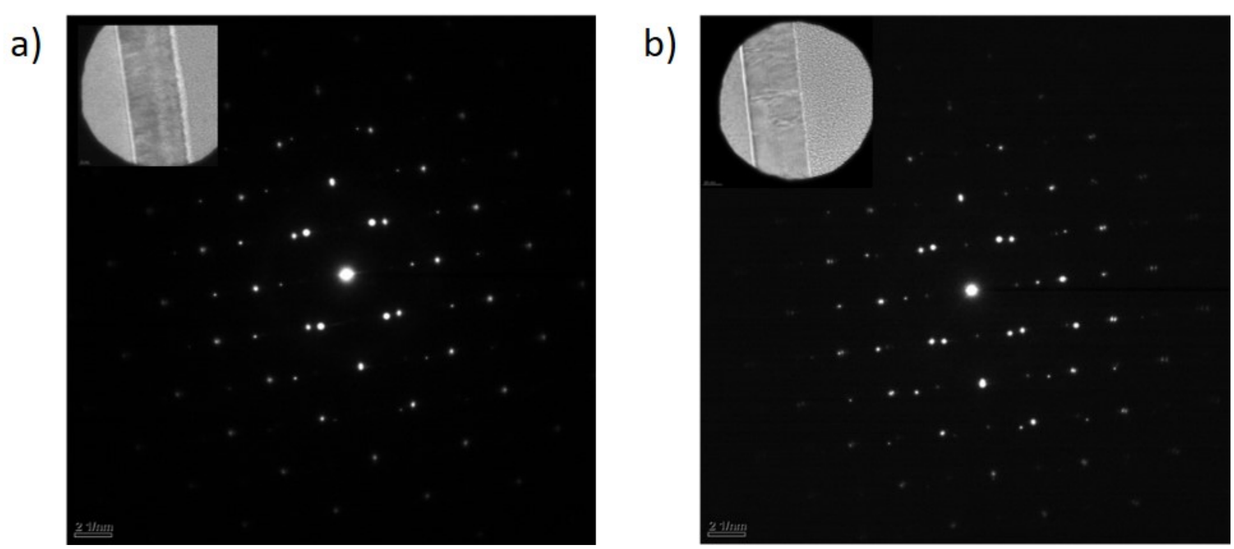


**Figure S4.** SAED image taken on the $(BaTiO_3)_3/(SrTiO_3)_5$ (**a**) and $(BaTiO_3)_5/(SrTiO_3)_3$ (**b**) superlattices.

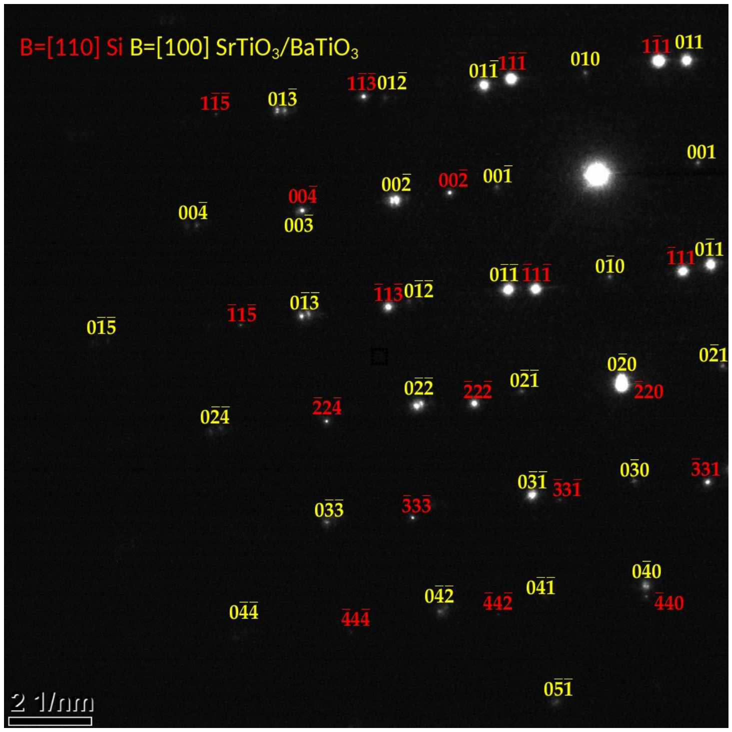


**Figure S5.** Indexed SAED image (1/4 part) taken on a $(BaTiO_3)_5/(SrTiO_3)_3$ superlattice.

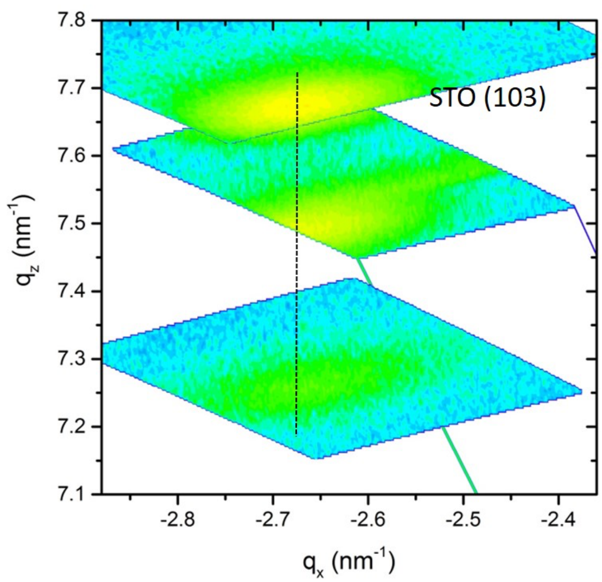


**Figure S6.** RSM of an asymmetric scan around the (103) peak of the *h*MBE $SrTiO_3$-substrate layer. The dashed line indicates the epitaxial strain of the superlattice structure to the in-plane lattice dimensions of the $SrTiO_3$-substrate layer.