Electronic Supplementary Material (ESI) for Dalton Transactions.

Supplementary

Growth and improved magnetoelectric response of strain modified Aurivillius $SrBi_{4.25}La_{0.75}Ti_4FeO_{18}$ thin films

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Fig. S1 (a) GIXRD scans of SBLFT/Pt/TiO_2/SiO_2/Si thin films grown at optimized conditions of 560 ^{o}C at 100-mTorr oxygen partial pressure with different thicknesses. (b) Pole figure for SBLFT grown at 560 ^{o}C.

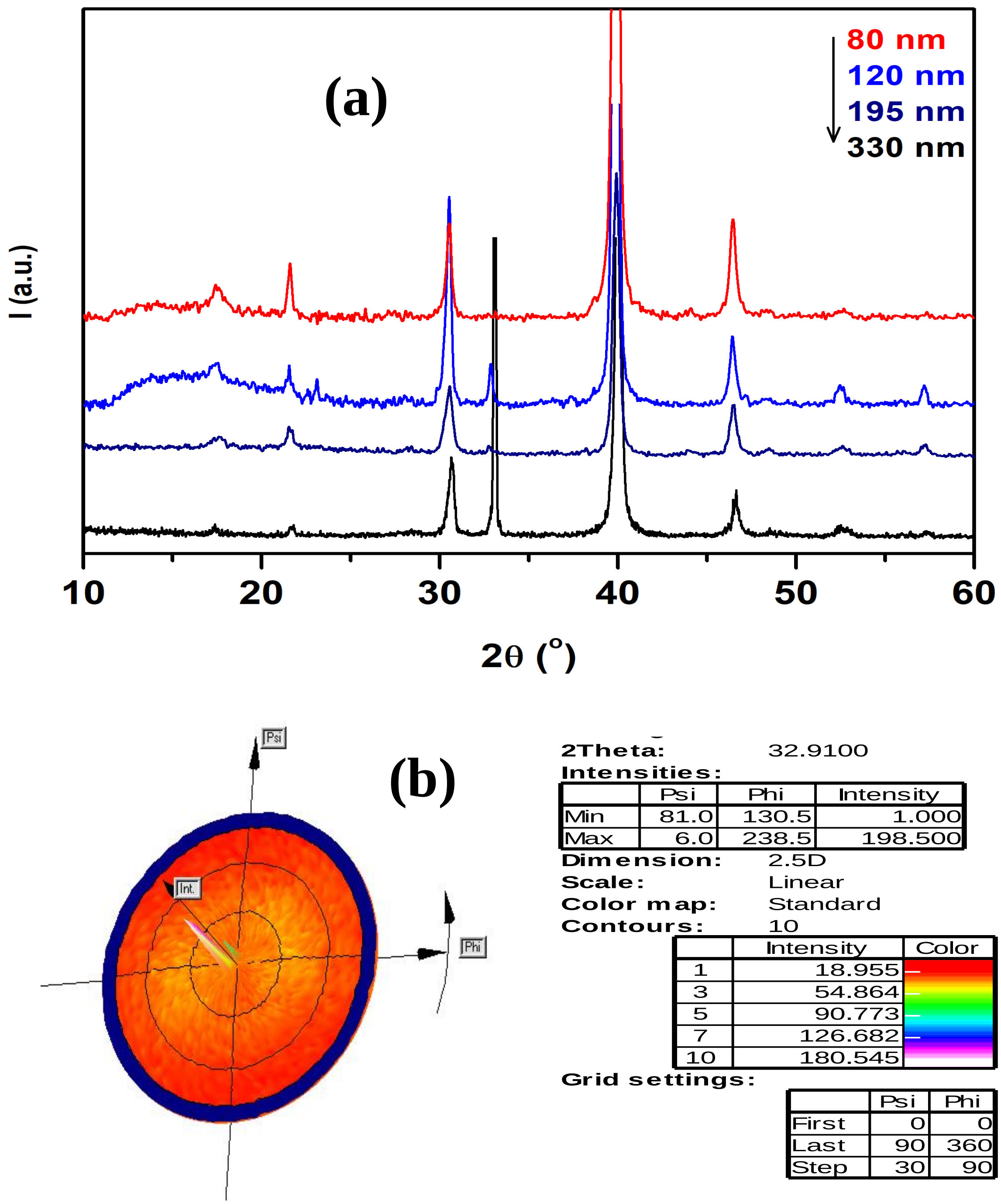

Fig. S2 Grain morphology of SBLFT thin films, observed by FESEM, for samples with a thickness of (a) 80 nm, (b)120 nm and (c) 330 nm and (d) ceramic SBLFT target used for thin film deposition.

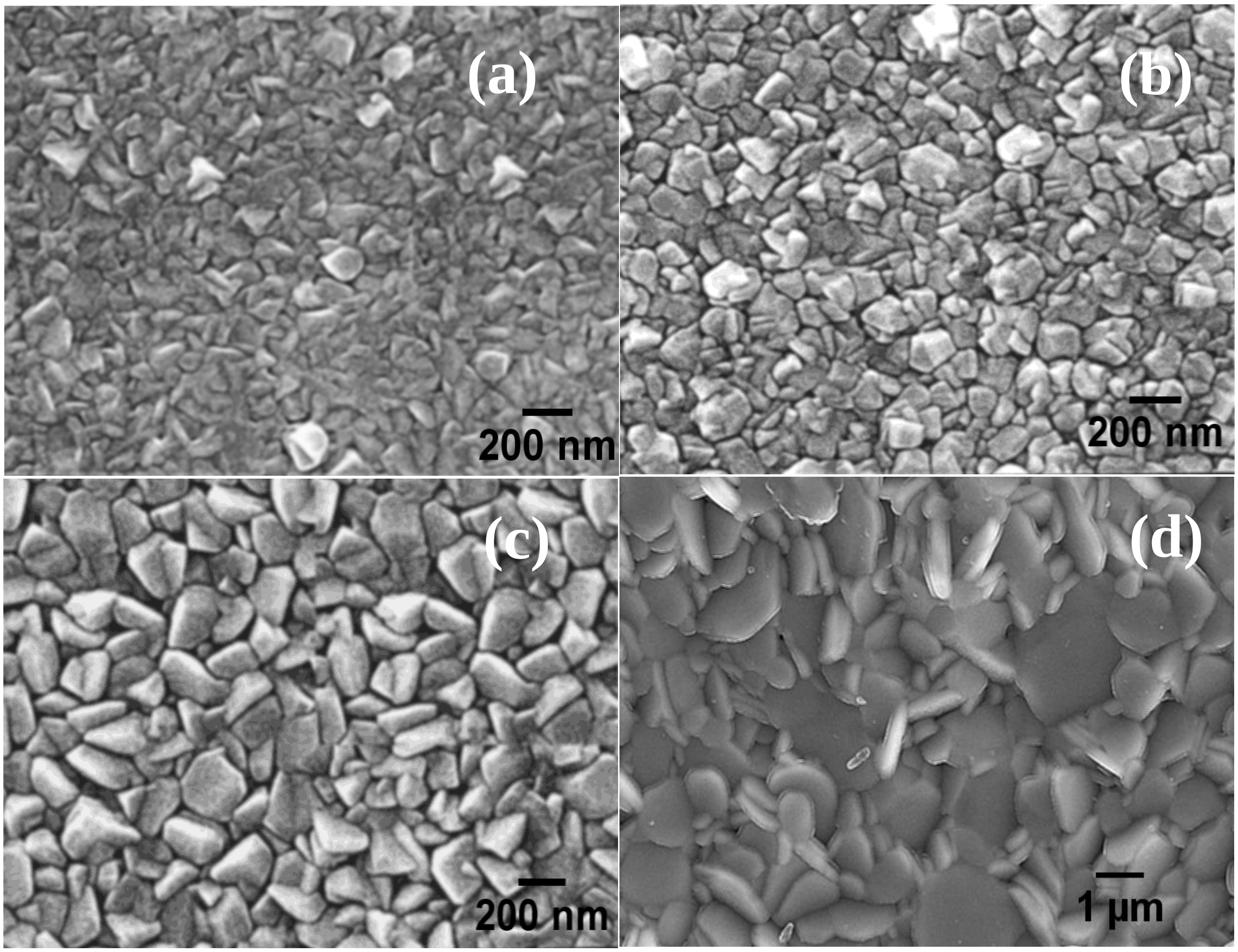

Fig. S3 Ferroelectric – paraelectric phase transition (T_C) is at 340 °C and high temperature maxima (T_m) is at 470 °C. This *Tm* can be related to the ferroelastic – paraelastic phase transition.

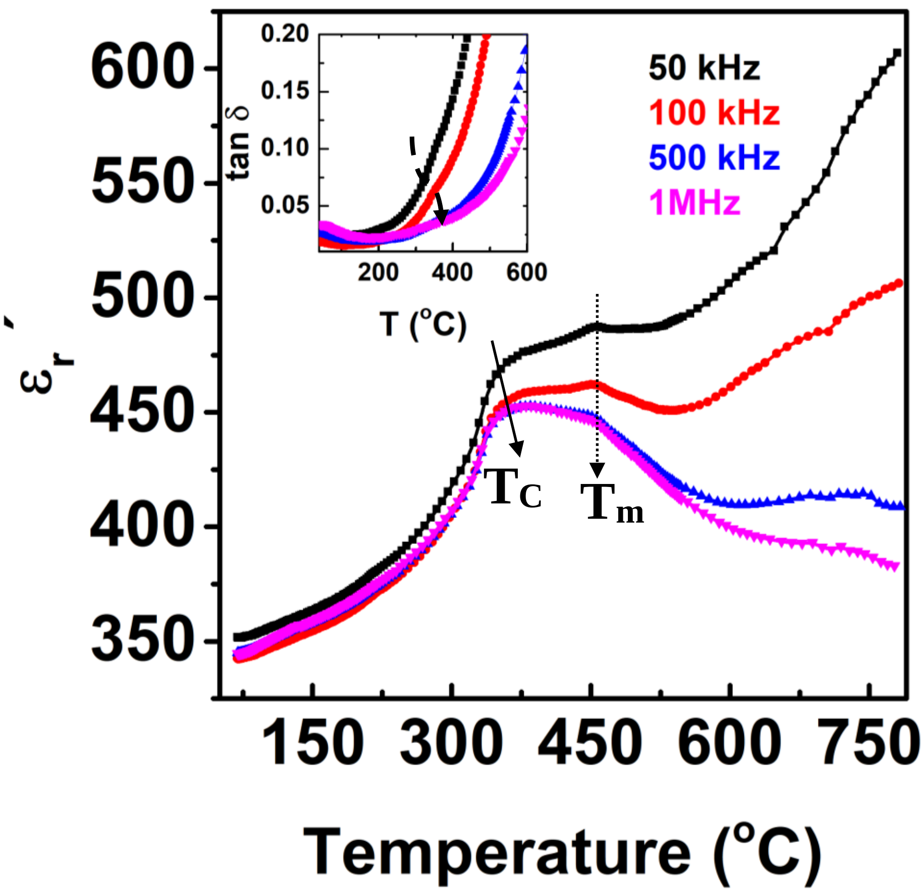

Fig. S4 EELS spectrum displaying the Bi-$N_{4,5}$, Ti-$L_{2,3}$, O-K; Fe-$L_{2,3}$, and La-$M_{4,5}$ edges.

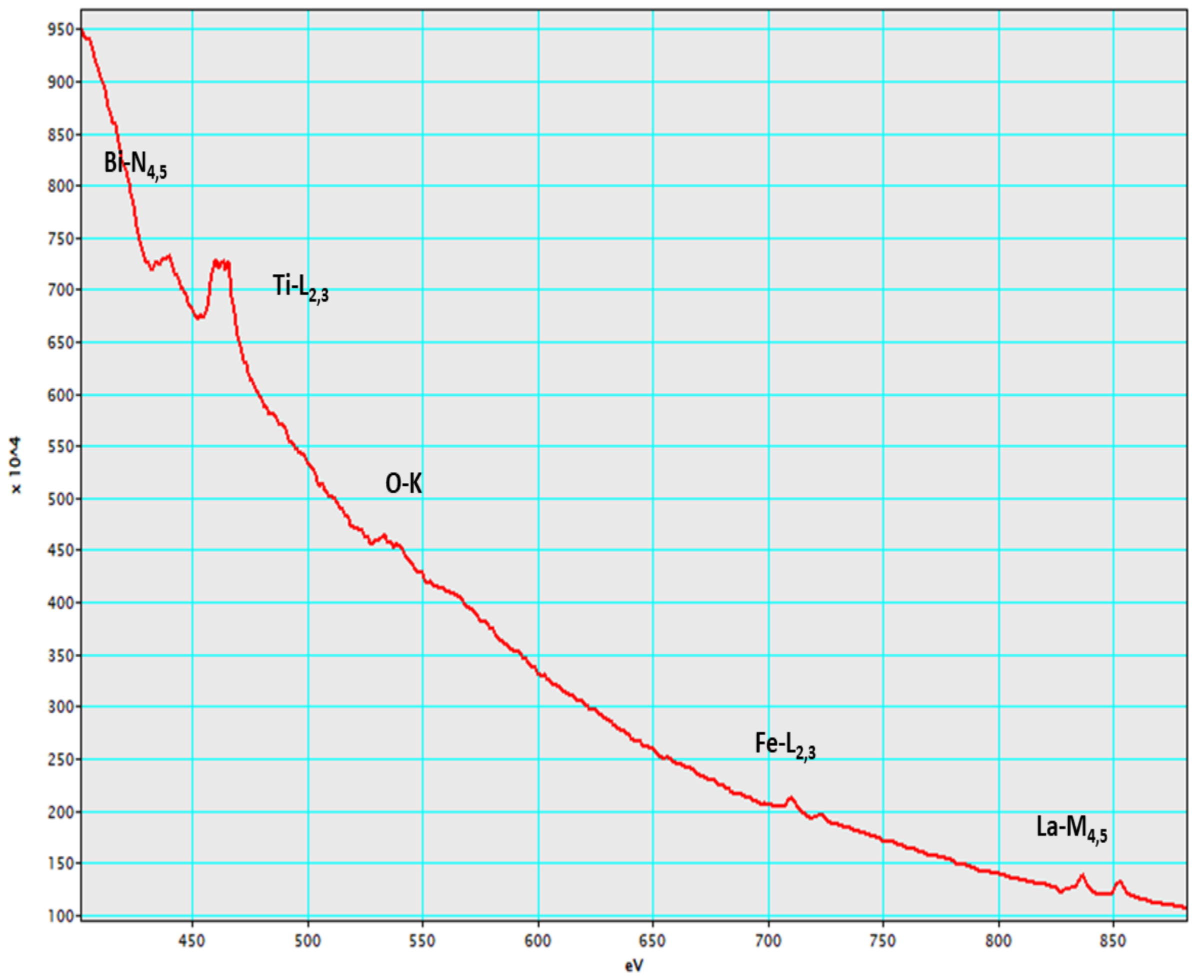

Fig. S5 (a) STEM ADF micrograph. The green square highlights the area used to perform the SR-EELS analysis. (b) DF micrograph acquired simultaneously as the SR-EELS spectra (c) Bi chemical map (d) EELS spectrum displaying the Bi-$M_{4,5}$ edges.

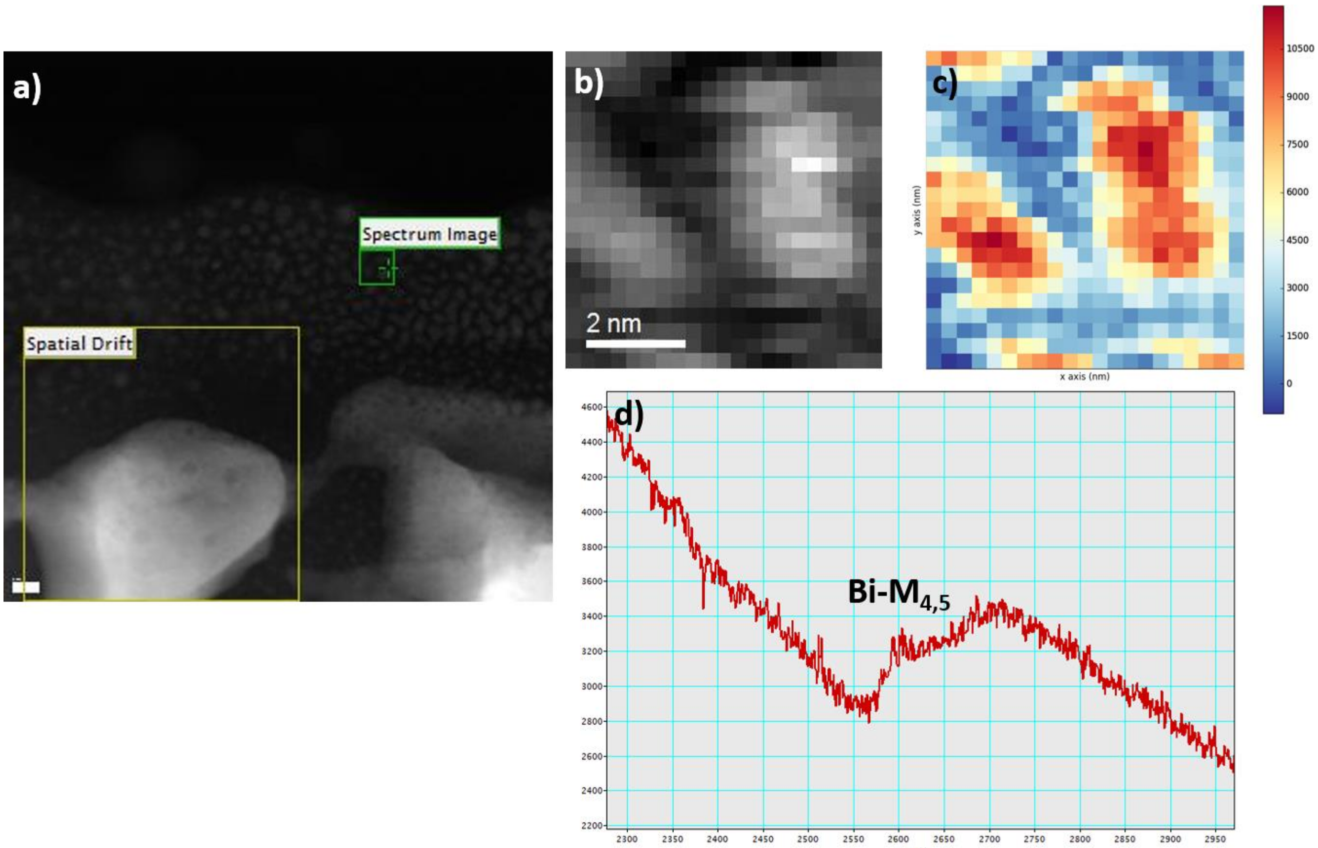

Fig. S5 (e) O/Fe ratio variation close to a nanoregions

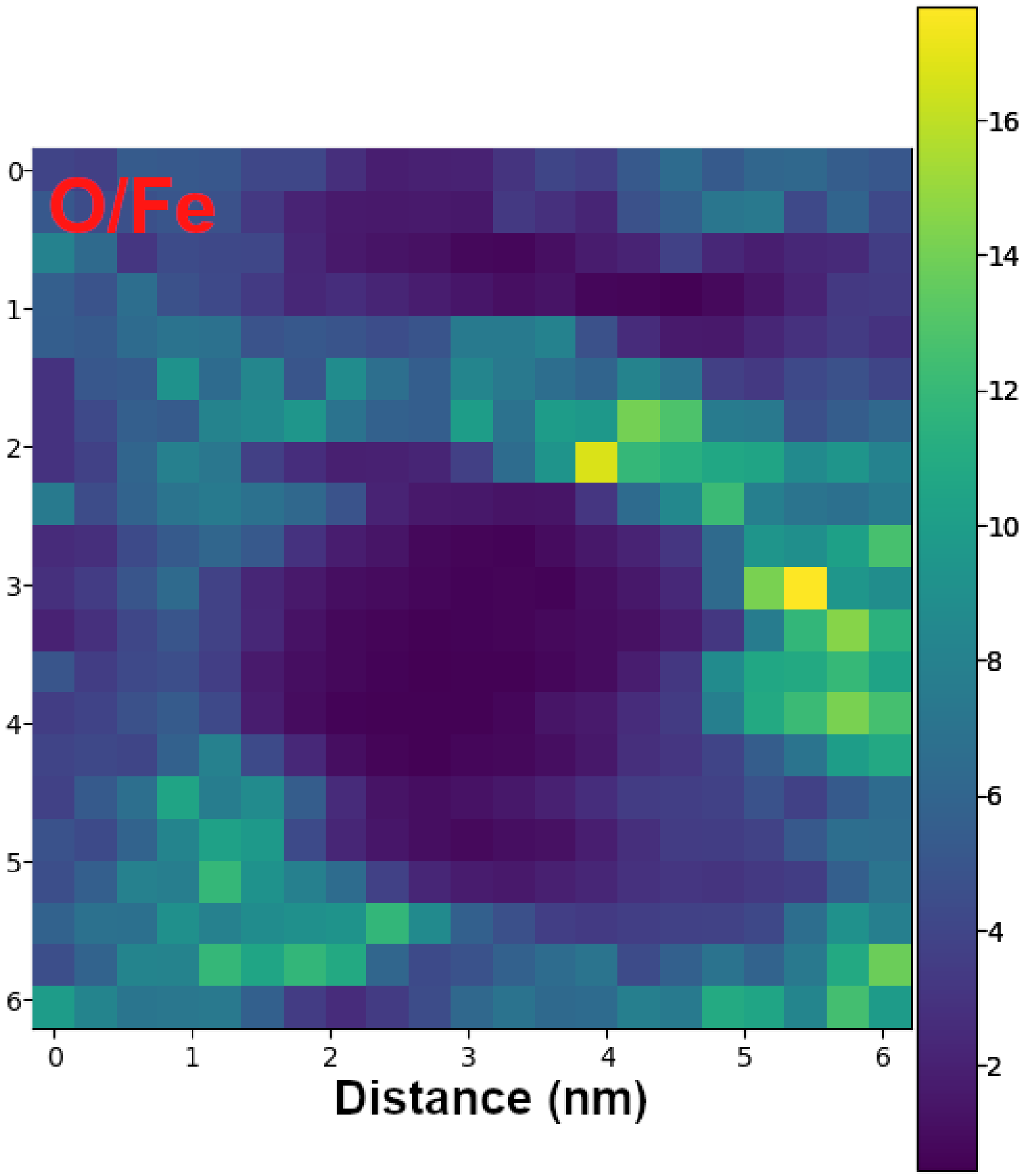

Fig. S6 (a) Polarization – electric field hysteresis loops of SBLFT thin films with different thickness and (b) P_r and E_C relation as a function of thickness.