Supporting Information for

Development of nanoscale inhomogeneities during drying of sol-gel derived amorphous lead zirconate titanate precursor thin films

Tomasz M. Stawski, Sjoerd A. Veldhuis, Hessel L. Castricum, Enrico G. Keim, Guy Eeckhaut,

Wim Bras, Dave H.A. Blank, and Johan E. ten Elshof

EELS mapping Pb-$M_{4,5}$

Electron energy loss spectra of as-dried PZT thin film with h = 9.3 are shown in Figure S1. The measurement demonstrates that the lead $M_{4,5}$ transition can be resolved with our spectrometer at an exposure time of 25 s. In our experiments we used an exposure time of 40 s to determine the distribution of Pb. Some problems might result from the effect of drift. Therefore, the sample thickness was optimized in order to accomplish optimal conditions. The sample should be neither too thick, nor too thin. For lead mapping (and also for or titanium and zirconium) we followed a “no-tolerance” policy for impeded data quality: pre-edge and post-edge spectra were collected with eight times binning. Hence, 2048x2048 images were averaged into 256x256 maps. Furthermore, we used the manual mode of the software to combine pre-edge and post-edge data. If we lost more than 1% of the map resolution in this procedure, we discarded the data set. Eventually all our mappings resulted in 256x256 elemental maps.

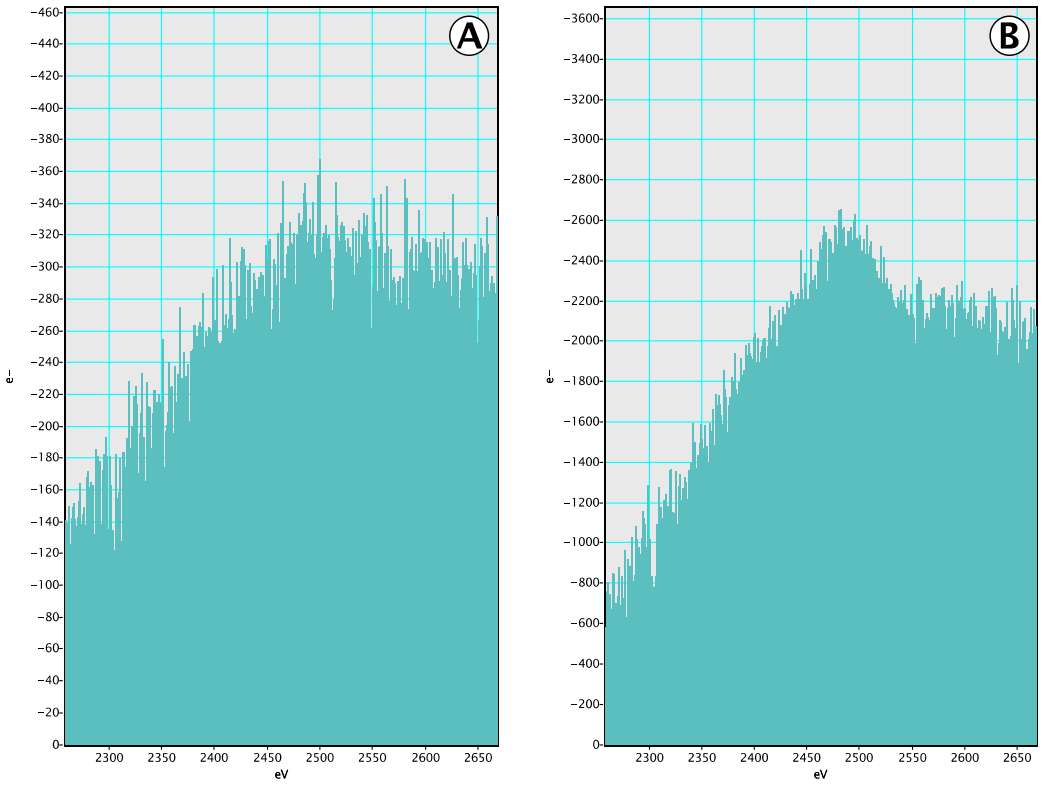

Figure S1. EELS mapping of Pb-$M_{4,5}$ edge (pre-edge 2324 eV, post-edge 2534 eV, slit width 100 eV). A) Exposure time 10 s; B) Exposure time 25 s.