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**Switchable 3-0 Magnetolectric Nanocomposite Thin Film with High Coupling**

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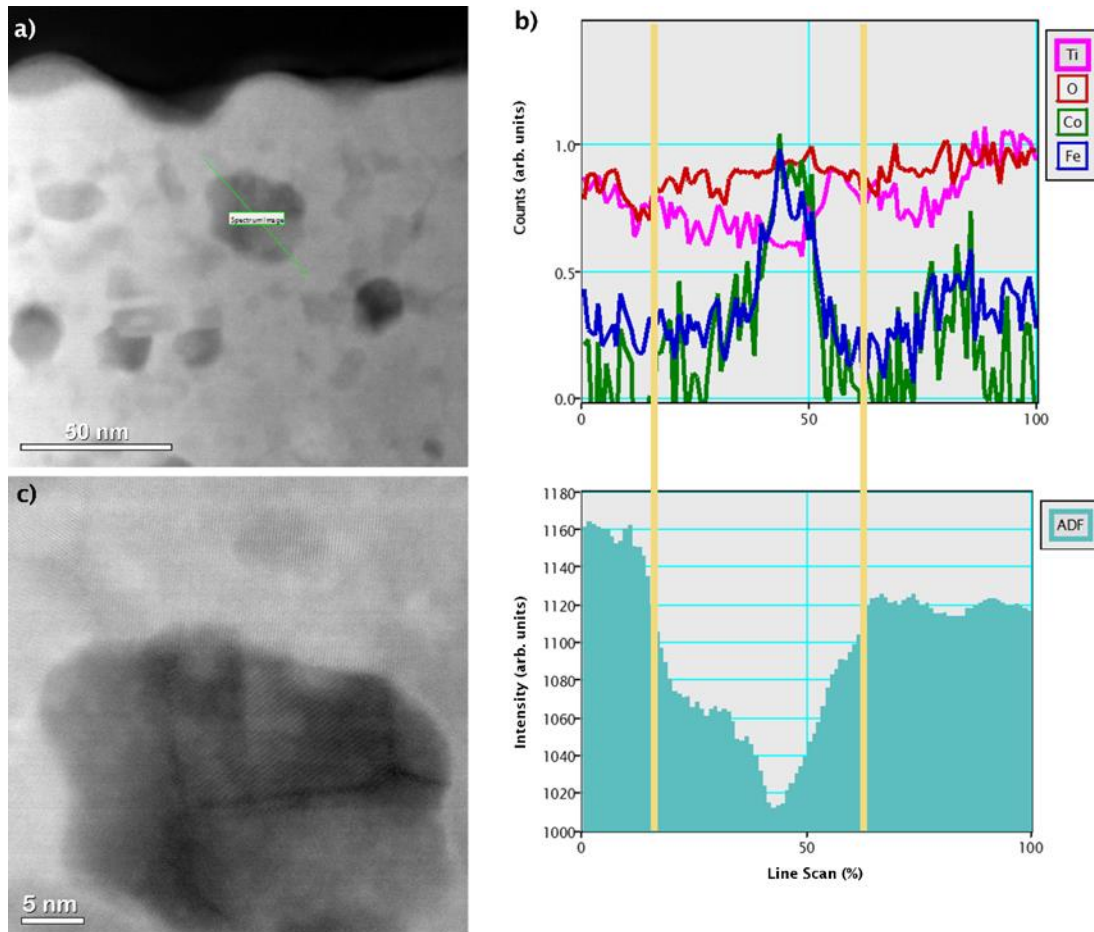
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**Supplementary Information:**

From TEM images and energy dispersive x-ray spectroscopy (EDS) measurements of the dark areas around the CFO particles are Ti-rich regions. The formation of a Ti-rich phase between the PZT matrix and CFO particles would explain the lack of a clear distinct interface. This point is demonstrated in Supplementary Figure 1. The TEM image in Supplementary Figure 1a shows the dark regions. An EDS line scan of across one of the dark regions shows how the elemental composition changes across the dark area. This line scan shows the presence of a CFO particle from the Co and Fe traces. Within the yellow highlights (which corresponds to the dark region of the TEM), but outside of the CFO particle, the concentration of Ti does not significantly change. The high resolution image of the dark area (shown in Supplementary Figure 1c) clearly shows the diffraction contrast of this dark area. The lattice fringe spacing corresponds to the rutile structure

of  $\text{TiO}_2$ . Together, these results suggest that the dark regions of the film surrounding the CFO particles are  $\text{TiO}_2$ .



Supplementary Figure 1: a) A TEM image showing the dark areas of the film. b) Top: the energy dispersive x-ray line scan across the dark area of the TEM image. Bottom: the annular dark field intensity across the line scan. The yellow highlights indicate the start and end of dark area in question. c) A high resolution TEM image of the dark area of the film showing the diffraction contrast.