Pinning of Ferroelectric Domain Walls in Nanostructured CoFe$_2$O$_4$-BiFeO$_3$ Composite KEREN FREEDY, RYAN COMES, University of Virginia, Department of Materials Science and Engineering, Charlottesville, VA, KERRY SIEBEIN, National Institute of Standards and Technology, Center for Nanoscale Science and Technology, Gaithersburg, MD, JIWEI LU, University of Virginia, Department of Materials Science and Engineering, Charlottesville, VA, STUART WOLF, University of Virginia, Department of Materials Science and Engineering, Department of Physics, Charlottesville, VA — Ferroelectric domain walls in BiFeO$_3$(BFO) thin films have attracted interest due to the observation of enhanced electronic transport at the domain walls in an otherwise insulating material. To understand the properties of domain walls in nanostructured thin films having matrix-pillar morphology, thin films of CoFe$_2$O$_4$ (CFO)-BFO were grown epitaxially by pulsed electron deposition on SrTiO$_3$ (STO) substrates. Piezoresponse force microscopy (PFM) measurements indicate that the vertically-oriented CFO nanopillars act as pinning sites for the in-plane domain walls. The pinning effect is most likely due to misfit dislocations at the matrix/pillar interface which have been identified in transmission electron microscopy images. The ability to produce ordered nanocomposites by directed self-assembly offers potential for more extensive investigation of domain wall behavior.