Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Domains in Multiferroic Films JULIA SLUTSKER, NIST, A. ARTEMEV , Carleton University, ALEXANDER ROYTBURD, University of Maryland — The theory and modeling of equilibrium self-assembling nanostructures based on concept of elastic domains in multiphase epitaxial films successfully explained the morpholgies of $CoFe_2O_4$-$PbTiO_3$ films grown on differently oriented substrates. It is shown that it is possible to design the different nanostructure architectures: cobalt ferrite rods in lead titanate matrix and vise versa as well as differently oriented laminar structures. The elastic interactions between the phases determine the mutual change of order parameters: magnetization and polarization, that allow one to estimate the magneto-electric coupling through the study of constrained polarization and magnetization.

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Date submitted: 06 Dec 2005 Electronic form version 1.4