

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Magnetoelectric effects in a bilayer of PZT and magnetostriction-graded ferrite**<sup>1</sup> G. SRINIVASAN, Oakland University, Rochester, MI, V.M. PETROV, Novgorod State University, Russia — Magnetoelectric (ME) effects in a piezoelectric-magnetostrictive composite are mediated by mechanical stresses. The effect, in particular, will be enhanced in the electromechanical resonance region (EMR) where the electrical subsystem shows resonance. We show here that further enhancement of the strength of ME interaction is possible with the use of magnetostriction-graded ferromagnet. A material with the grading axis perpendicular to the sample plane is considered. In this case, the thickness dependence of the piezomagnetic coefficients leads to an additional bending strain, resulting in an increase in the ME voltage. Estimates are provided for a bilayer of Zn-doped nickel ferrite and lead zirconate titanate, length 12 mm in length and 2 mm in thickness. The ME voltage coefficient is predicted to increase by a factor of two compared to bilayers with homogeneous ferrite compositions.

<sup>1</sup>Supported by grants from NSF and Russian Foundation for Basic Research.

Gopalan Srinivasan  
Oakland University

Date submitted: 19 Nov 2007

Electronic form version 1.4