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Functionally Graded Composite Multiferroics and Magnetolectric Interactions G. SREENIVASULU, S.K. MANDAL, Oakland University, V.M. PETROV, Novgorod State University, G. SRINIVASAN, Oakland University — This work is on (i) synthesis of functionally stepped or graded ferrite-ferroelectric bilayers and (ii) investigations on the nature of magneto-electric (ME) interactions. The parameters of importance for grading are the piezomagnetic coefficient q and piezoelectric coefficient d that determine the strength of ME coupling. Recent theories predict strong ME interactions in graded systems. Bilayer and trilayers of nickel cobalt ferrite-lead zirconate titanate were studied. Grading of q was accomplished by compositional variation of the ferrite and grading of d was achieved by poling the piezoelectric layers in opposite directions. Studies on low-frequency and resonant ME – coupling reveal strong ME effects in graded systems. – work supported by grants from DARPA and NSF.

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