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Microwave Magnetoelectric Interactions in Ferrite-Piezoelectric Bilayers\textsuperscript{1} ALEXANDER TATARENKO, Oakland University, VIKAS MATHE, Pune University, GOPALAN SRINIVASAN — The measurement of the strength of microwave magnetoelectric (ME) interactions through ferromagnetic resonance (FMR) in bilayers of single crystal ferrite-piezoelectric oxides is reported. An electric field $E$ produces a mechanical deformation in the piezoelectric phase, resulting in a shift in the resonance frequency for the ferrite. The strength of ME coupling is obtained from data on frequency shift vs $E$. Studies were performed on bilayers with single crystal yttrium iron garnet (YIG) films or single crystal nickel zinc ferrite and single crystal lead zirconium niobate-lead titanate (PZN-PT) or polycrystalline lead zirconate titanate (PZT). The samples were positioned in a microstripline-alumina ground plane structure. Resonance profiles were with a vector network analyzer obtained for $E = 0-8$ kV/cm for in-plane magnetic fields $H$. Important results are as follows. (i) The ME coupling in the bilayers is stronger in bilayers with PZT than for PZN-PT. (ii) The coupling is a factor of 2 stronger in samples with nickel zinc ferrite than for YIG. The bilayers are potentially useful for E-tunable microwave resonators, filters and phase shifters.

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