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Magnetoelectric characterization of magnetostrictive-piezoelectric semi-ring structure V.M. PETROV, I.N. SOLOVIEV, Novgorod State University, NING ZHANG, Nanjing Normal University, G. SRINIVASAN, Oakland University — Resonant modes and magnetoelectric (ME) performance of piezoelectric semi-ring with magnetostrictive insert are considered. The magnetostrictive rod is supposed to match the diameter of the semi-ring. The ac magnetic field is applied along the rod so that demagnetizing effects are minimized. The output voltage is induced in the radial direction of the piezoelectric semi-ring. Using such a structure enables effective transfer of mechanical strain and strong ME coupling. Theoretical modeling of resonant modes for in-plane bending vibration in the semi-ring was applied to PZT ring and Terfenol-D rod. The estimates agree with measured values of 70 V/(cm·Oe). Such semi-ring ME structures are useful for magnetic field sensor applications. – work supported by grants from DARPA and NSF.

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