Magnetoelectric properties of multiferroic composites with pseudo 2-2 type multilayered structure

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Abstract: A pseudo 2-2 type multilayered magnetoelectric composite of Pb(Zr, Ti)O3 slice array (with base) and Terfenol-D/epoxy medium was prepared by the dice-and-fill technique. Obvious magnetoelectric anisotropy was observed in the pseudo 2-2 type composite, e.g., the magnetoelectric coefficients at low frequency were about (1.62-1.75) × 105 V · m-1T-1 in the in-plane directions, but only 1.3 × 104 V · m-1T-1 in the out-of-plane direction. The pseudo 2-2 type composite can detect AC magnetic field as small as 10-9 T under resonance drive. The magnetoelectric anisotropy and high magnetic field sensitivity make such pseudo 2-2 type multilayered magnetoelectric composites detect both direction and magnitude of magnetic field, which is of technological importance for applications as magnetic sensors. © 2009 Chin. Phys. Soc.

Author Keywords: Magnetoelectric effect; Multiferroics; Multilayered composites

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