Converse magnetoelectric effect in (0-3) CoFe$_2$O$_4$-BaTiO$_3$(20/80) composite ceramics prepared by the organosol route

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Abstract — In this paper we report on a new approach to synthesize core/shell cobalt iron oxide/barium titanate composite nanoparticles combining the co-precipitation and organosol crystallization techniques. The weight fraction of CoFe$_2$O$_4$ and BaTiO$_3$ was 20% and 80% respectively. The obtained core/shell powder was used to sinter (0-3) composite multiferroic ceramics. Ferroelectric, magnetic, and magnetoelectric properties of the ceramics were studied. It was found that the value of the converse magnetoelectric coefficient, $\alpha_c$, reaches $4.4\cdot10^{-12}$ s·m$^{-1}$ at the magnetic field $\mu_0 H_{dc} = 0.15$ T and $T = 285$ K.

Keywords: Multiferroics; magnetoelectric effect; composite.