

Magnetodielectric Properties of CuO and MnO₂ Modified BiFeO₃-BaTiO₃ Solid Solution

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We have carried out a systematic study of the structural, magnetodielectric and ferroelectric properties of 0.675BiFeO₃-0.325BaTiO₃. 0.675BiFeO₃-0.325BaTiO₃ + *x* wt % CuO + *y* wt % MnO₂, (where *x*=0, *y*=0; *x*=0.15, *y*=0.1; *x*=0.3, *y*=0.2; and *x*=0.6, *y*=0.4) multiferroic ceramics, prepared by a conventional ceramic fabrication technique. We have found that the remanent polarization (*P_r*) increased from 26.57 μC/cm² to 30.06 μC/cm² after magnetic poling at a field of 20 kOe. The values of piezoelectric coefficient (*d*₃₃) and magnetocapacitance (MC) were found to be increased with increasing the content of CuO and MnO₂. The 0.6 wt % CuO + 0.4 wt % MnO₂ modified system shows a very interesting direct magnetoelectric coupling (*α*~10⁻⁸ s/m) and magnetocapacitance (2.5 %).