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Title:	Magnetodielectric properties of multiferroic composite films
Authors:	Kumar, Ajeet (/jspui/browse?type=author&value=Kumar%2C+Ajeet)
Keywords:	Multiferroics material Magnetocapacitance Magnetic field Ferroelectric domains
Issue Date:	2016
Publisher:	Serials Publications
Citation:	International Journal of Control Theory and Applications, 9(20), pp. 369-376
Abstract:	In this work we report the magnetic and magnetodielectric properties of two types of composite films, namely, (i) uFe ₂ O ₄ - Poly (vinylidene-fluoride)-BiFeO ₃ (CBO) and (ii) CuFe ₂ O ₄ -Poly (vinylidene-fluoride)-PbTiO ₃ (CPO) at room temperature. These films were synthesized by solid state reaction of ceramics followed by hot press method. Distinct ferroelectric domains observed by using piezoelectric force microscopy and the hysteresis loops observed in magnetization measurements; show the multiferroic nature of both the films. The coercive fields, H _c were observed to be ~ 0.835 kOe and ~0.7305 kOe for CBO and CPO films, respectively, whereas the values of remnant magnetization, M _r were found ~ 4.3 emu/g and ~ 4.9 emu/g, respectively. Moreover, we observe a systematic enhancement (more than 7 %) of dielectric constant with increase in strength of magnetic field for both of these films. Although BiFeO ₃ is multiferroic material but due to good magnetodielectric behaviour in this composite film represents a sign of strong effective mechanical interaction between uFe ₂ O ₄ and BiFeO ₃ through the polymer matrix. This type of study may lead to innovative solution for various technological application such as memory devices, magnetic sensors, spin based devices (spintronics)etc.
Description:	Only IISERM authors are available in the record.
URI:	https://www.researchgate.net/publication/309426907_Magnetodielectric_Properties_of_Multiferroic_Composite_Films (https://www.researchgate.net/publication/309426907_Magnetodielectric_Properties_of_Multiferroic_Composite_Films) http://hdl.handle.net/123456789/2605 (http://hdl.handle.net/123456789/2605)
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