

ABSTRACT

THIN FILMS OF FERROELECTRIC MATERIALS AND A METHOD FOR PREPARING SAME

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Thin films of ferroelectric material with a high mole fraction of $\text{Pb}(\text{A}^{2+}_{1/3}\text{B}^{5+}_{2/3})\text{O}_3$ substantially in a perovskite phase, wherein A is zinc or a combination of zinc and magnesium, and B is a valence 5 element such as niobium or tantalum, have been prepared. Typically, the mole fraction of $\text{Pb}(\text{A}^{2+}_{1/3}\text{B}^{5+}_{2/3})\text{O}_3$ in the ferroelectric material is > 0.7 . The method for preparing the thin films of ferroelectric material comprises providing a precursor solution containing lead, A^{2+} , and B^{5+} ; modifying the precursor solution by addition of a polymer species thereto; applying the modified precursor solution to a surface of a substrate and forming a coating thereon; and (d) subjecting the coating to a heat treatment and forming the film in the perovskite phase. Optimal results have been obtained with PEG200 as the polymer species.

(Fig. 20)