

Multiferroic Magnetolectric Materials: Synthesis and Properties

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Abstract: Multiferroic and Magnetolectric Materials have aroused interest since it is possible to integrate properties of high technological applicability, such as ferroelectricity and ferromagnetism, and the possibility of manipulating electrical and/or magnetic orders with the application of external magnetic/electric fields. The basic materials physics of such materials provide the ideal playground for interdisciplinary scientific exploration with an eye toward real applications, such as developing high-performance electronics devices with multifunctionality in a smaller volume. A better understanding of the nature of the interaction between the different phases as well as the role of the interface in the coupling induction/manipulation process remains one of the questions to applying the magnetolectric effect to new multifunctional devices. Thus, current works unravel the parameters that create/maximize the magnetolectric coupling in different multiferroic systems by developing new single-phases, composites, and heterostructured materials. In this talk, I will describe our progress in this exciting area, including a summary of where the future research is going.