Probing Spin-Lattice Correlations in Hexagonal RMnO₃ Multiferroics

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The hexagonal multiferroic system RMnO₃ is known to exhibit strong spin-lattice correlations based on bulk thermal expansion measurements. Enhanced correlations at the spin ordering temperatures are observed. In this work, we examine the local structure about the R and Mn sites in order to determine the changes in atomic interactions which coincide with the spin alignments. Measurements over a broad range of temperatures are presented and estimates of the changes in atomic bond distances are given.

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