# "Synthesis of Thin Films of NaNbO3 for Various Applications"


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Sodium niobate (NaNbO3) has attracted significant attention in recent years due to its unique combination of properties and versatile applications in various fields. As a well-known perovskite oxide, NaNbO3 possesses attractive physical characteristics. NaNbO3 is both non-toxic and highly stable, enhancing its suitability for a range of applications. NaNbO3 has been extensively studied over the past decades as a piezoelectric material, with increasing interest in recent times due to its potential as a lead-free alternative to PZT. Furthermore, NaNbO3, and other niobium-based perovskites, demonstrate good photocatalytic activity. In addition to their piezoelectric and photocatalytic properties, NaNbO3-based ceramics have emerged as promising candidates for energy storage applications. Their wide bandgap, robust polarization strength, and low volume density make them suitable for such roles. Various efforts have been made to optimize the energy storage capabilities of NaNbO3-based ceramics through tailored compositional adjustments.
An overview of the various potential applications of NaNbO3 and its complex structural characteristics will be presented. The synthesis of NaNbO3 thin films using Pulsed Laser Deposition (PLD) with in-situ Reflection High Energy Electron Diffraction (RHEED) diagnostics will be outlined. Scanning Electron Microscopy, Atomic Force Microscopy, High Resolution X-Ray Diffraction, and Piezoelectric Force Microscopy, will be employed to preliminary study the intricate relationships among morphological, structural, and piezoelectric properties. Factors such as deposition parameters, strain conditions, and substrate-induced chemistry within NaNbO3 thin films will be considered.