

## **Advancements in Thin Film Oxides: Exploring Interface Functionalities**

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Complex oxides exhibit a wide range of fascinating functionalities, such as ferroelectricity, piezoelectricity and pyroelectricity, which are indispensable for cutting-edge electronics, energy, and information technologies. The intriguing physical properties of these complex oxides arise from the complex interplay between lattice, orbital, charge, and spin degrees of freedom. Here, I will provide an overview of our recent results of how the properties of oxide heterostructure can be tuned by artificially breaking the symmetry of ferroelectric, piezoelectric, electrostriction and pyroelectric materials. Additionally, I will explore innovative approaches that have made it possible to produce ultrathin, freestanding oxide films that approach the two-dimensional limit. This array of advancements presents unique opportunities for harnessing the rich and novel functionalities of complex oxides and their interfaces.