

# **Susceptible Ferroelectric/Antiferroelectric Phase Transition Near the Surface of Typical Antiferroelectric Materials**

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This work systematically investigated the structure and property of the near-surface and bulk regions of two typical  $\text{PbZrO}_3$  and  $\text{AgNbO}_3$ -based antiferroelectric ceramics using a combination of X-ray and neutron diffraction, piezoelectric force microscopy, and conventional ferroelectric/piezoelectric characterization. It is found that mechanical force can induce an antiferroelectric/ferroelectric phase transition within micrometers of the surface. Such a phase transition is strongly dependent on the processing scenario, leading to differences from the bulk region. This work provides crucial insights into the sensitivity of this class of AFE materials. Clearly surface processing conditions must be taken into account for both accurate structural determination and practical applications.