

## **Comprehensive approach to study on the crystal structural details within epitaxial BiFeO<sub>3</sub> films**

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BiFeO<sub>3</sub> (BFO) has been known as a multiferroic material with ferroelectricity and antiferromagnetism well above room temperature since 1970s. The recent resurgence of BFO as a multiferroic material was triggered by the revelation of its true bulk physical properties in the mid 2000s. Subsequently, with the availability of high quality single crystal oxide substrates, BFO has been grown as thin films on a variety of single crystal substrates in an attempt to modify its physical properties by imparting epitaxial strains. Since the crystal and microstructural modifications caused by the epitaxial strains dominate the multiferroic property changes in BiFeO<sub>3</sub>, tremendous efforts have been devoted to the investigation of the structural changes in epitaxial BiFeO<sub>3</sub> films. However, details about strain-induced structural modifications remain elusive owing to the remarkably complex nature of BiFeO<sub>3</sub>. In this talk, I will discuss a strategy about (1) how to unambiguously identify crystal symmetries in epitaxial BiFeO<sub>3</sub> and (2) once crystal symmetries are clearly identified, how can the misfit strain be accurately evaluated.