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Quantitative comparison of bright field and annular bright field imaging modes for characterization of oxygen octahedral tilts

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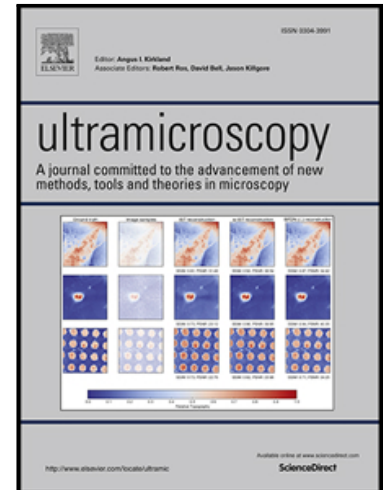
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**Highlights**

- An aberration-corrected BF STEM imaging at an accelerating voltage of 300 kV provides a wide range of defocus-thickness imaging parameters and specimen misorientation for precisely locating oxygen positions in a tilted perovskite structure.
- BF STEM imaging for the measurements of oxygen octahedral tilts has quantitatively compared with ABF STEM imaging by systematic image simulations.
- BF STEM imaging working at 300 kV shows superior accuracy for the measurements of the octahedral tilt angles as compared with ABF STEM imaging.

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