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【159】 The polar distortion and its relation to magnetic order in multiferroic HoMnO₃

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The orthorhombic (Pbnm) HoMnO₃ is of particular interest due to its high magnetically-induced polarization values and magnetoelectric coupling strength. The high magnetic frustration results in a magnetic order that creates a distortion in the crystal lattice. This distortion breaks inversion symmetry and creates a macroscopic electric polarization P along the a -axis.

We investigated the broken symmetry of Pbnm in thin films of HoMnO₃ at low temperature and the relation between the magnetic order and the structural distortion. Forbidden reflections for Pbnm show that the distortion does not exclusively affect to the atomic position along the polar axis. Moreover, studying reflections with component along the polar axis reveals the polar distortion directly, visualized by the difference diffraction intensity from opposite domains.

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