# Oral Contributions

**[MS17-04] Determining symmetry of ferroelectric oxides at the nanometre scale using 'digital' electron diffraction.**

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The functional properties of ferroelectrics are determined by their symmetry. Although this is a fundamental property, it can be surprisingly difficult to determine using X-ray and neutron diffraction in cases where spontaneous symmetry breaking leads to multi-domain configurations with dimensions on the nm scale. For example, there is still debate on the appropriate space group for widely-studied materials such as Pb(x)Zr(1-x)TiO(3) and Na(0.5)Bi(0.5)TiO(3). Electron diffraction has the required resolution, strong scattering that gives sensitivity to nano-scale volumes, and dynamical effects that give sensitivity to non-centrosymmetric and chiral crystals, but the small Bragg angle often prevents its use in real situations. Here we present a new technique using computer control of beam tilt and image capture in a conventional transmission electron microscope, which overcomes this problem, quickly providing very rich diffraction datasets. The level of detail and complexity in the data often removes any ambiguity, and as an example we present data that shows beyond doubt that the space group of Na(0.5)Bi(0.5) TiO(3) is R3c on length scales of a few nm.