# Stuttgarter Physikalisches Kolloquium

Max-Planck-Institut für Festkörperforschung
Max-Planck-Institut für Intelligente Systeme
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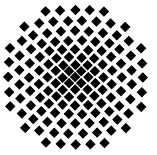

**Dienstag, 4. Oktober 2016** | **17.15 Uhr** | **Hörsaal 2 D5**

**Stuttgarter Max-Planck-Institute, Heisenbergstraße 1, 70569 Stuttgart-Büsnau**

# A Room-Temperature Multiferroic made by Thin-Film Alchemy

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## Abstract

Multiferroics hold tremendous promise for enabling the electrical control of magnetism. Such materials are, however, exceedingly rare due to competing requirements for ferroelectricity and magnetism. Single-phase multiferroics are currently limited to antiferromagnetic or weak ferromagnetic alignments, lack coupling between the order parameters or have properties that only emerge well below room-temperature. Utilizing the ability of oxide molecular-beam epitaxy to create new structures with atomic-layer precision, we construct a new single-phase multiferroic material where ferroelectricity and strong magnetic ordering are coupled near room-temperature. Our results demonstrate a design methodology for creating higher-temperature magnetoelectric multiferroics by exploiting a combination of geometric frustration, lattice distortions, and synthesis science. This is just one example of the unparalleled properties—those of hidden ground states—being unleashed in epitaxial oxide heterostructures utilizing thin film alchemy.