TRANS-CAPACITANCE IN DESIGNED FERROELECTRICS

Tech ID: 34643 / UC Case 2026-117-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Traditional electronic materials typically exhibit electrical properties aligned in the same direction as the applied electric field. However, researchers at UC Berkeley have developed a new class of Aurivillius phase layered ferroelectric materials that enable unique "trans-capacitance" effects. These materials possess a coexistence of in-plane and out-of-plane polarization.

SUGGESTED USES

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High-Density Memory Storage: Developing next-generation non-volatile memory devices that leverage multi-axis polarization for higher data density.

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Cross-Coupled Electronic Sensors: Creating sensors that can detect electrical signals in one orientation while being powered or controlled from another.

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Micro-Electromechanical Systems: Implementing specialized actuators and transducers that require precise, directional control of electrical energy.

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Advanced Integrated Circuits: Designing compact capacitors and coupling components that reduce interference by separating signal and field directions.

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Quantum Computing Hardware: Providing stable, directionally tunable ferroelectric layers for high-precision control in low-temperature electronic environments.

ADVANTAGES

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Unique Electrical Coupling

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High Design Versatility: Offers engineers more options for routing electrical signals and managing fields within small-scale devices.

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Compact Device Integration: Enables more complex circuit architectures in a smaller footprint by allowing fields to cross without interference.

CONTACT

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OTHER INFORMATION

CATEGORIZED AS

» **Computer**

» Hardware

» **Engineering**

» Engineering

» **Materials & Chemicals**

» Nanomaterials

» Other

» **Semiconductors**

» Materials

RELATED CASES

2026-117-0

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Robust Polarization.

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Material Precision: The specific layering of the ferroelectric material allows for predictable and repeatable trans-capacitance values.

RELATED MATERIALS

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