

SCIENCE CHINA Information Sciences

Call for Paper:

Special Topic: Novel Memory Materials and Devices: Ferroelectrics and Oxide Semiconductors

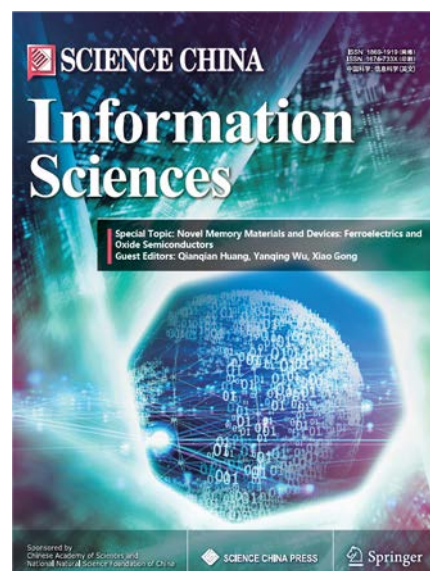
Ferroelectrics as non-centrosymmetric materials can possess spontaneous polarization at the zero electric field over a certain temperature range. For decades, ferroelectric electronic devices based on traditional ferroelectric perovskite materials have been developed, leading to significant advancements, such as the development of multi-layer ceramic capacitors and ferroelectric random-access-memory (RAM). Since the discovery of ferroelectric hafnium oxide in the year of 2011, ferroelectric-based memory devices have revived and attracted extensive attention for diverse applications. Compared with traditional ferroelectric perovskite materials, the ferroelectric hafnium oxide material can be deposited by the ALD process, which enables the realization of complicated 3D structures. This special topic highlights the recent advances in novel ferroelectric materials, memory devices, and their potential applications.

Oxide semiconductors, represented by IGZO, were developed in 2004 and have rapidly found commercial applications in the display industry. In recent years, scaled ultrathin oxide semiconductors have shown enormous application potential in silicon back-end-of-line (BEOL) compatible logic and memory applications due to their low thermal budget and excellent electrical properties such as extremely low off-state leakage current. Furthermore, new approaches for material growth are emerging recently using atomic layer deposition, which facilitates future applications in vertical channels and 3D stacking. Meanwhile, the complicated multi-component nature of oxide semiconductors has also brought many challenges from material science to device reliability. This special topic highlights the recent advances in novel oxide semiconductor material growth, memory and logic devices, and their potential applications.

This special topic focuses on novel memory materials and devices including ferroelectrics and oxide semiconductors. Prospective authors are invited to submit their original research papers and review articles on the state-of-the-art progress of selected topics.

Topics of interest for this special issue include, but are not limited to:

- Novel ferroelectric memory materials
- Ferroelectric memory device technologies (FeRAM, FeFET, FTJ, etc.)
- Ferroelectric-based devices for novel computing and bioinspired systems



- Ferroelectric device modeling and simulation
- 3D integration of ferroelectric devices
- Novel oxide semiconductor material growth and characterization
- Oxide semiconductor device technology (short channel devices, vertical channel devices)
- Oxide semiconductor device modeling and reliability
- Oxide semiconductor devices for memory, logic, and RF applications
- 3D integration of oxide semiconductors with other device technologies

Submission:

The papers should be edited in the SCIS template, and submitted online through the manuscript submission system of *SCIENCE CHINA Information Sciences*. The submission website is <https://mc03.manuscriptcentral.com/scis>. You should choose **Special Topic: Novel Memory Materials and Devices: Ferroelectrics and Oxide Semiconductors**. Information and guidelines on the preparation of manuscripts are available on the journal website: <http://scis.scichina.com>.

Important Dates:

Submission deadline: December 31, 2024

Acceptance notification: March 15, 2025

Final manuscripts due: April 1, 2025

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