Literature review: - bismuth layered structure ferroelectric compounds

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Abstract:

Bismuth layer-structured ferroelectrics (BLSFs), highlighting their synthesis, structural characteristics, and diverse applications. Initially synthesized in 1949 by Aurivillius, BLSFs have found commercial utility in various fields such as ferroelectric non-volatile random access memory (FRAM) storage devices, high-temperature piezoelectric applications, sensors, and photo-catalysts. Their advantageous electrical properties include excellent fatigue endurance, rapid switching speed, robust polarization retention, relatively high Curie temperature, low aging rate, and low operating voltage. Notably, BLSFs offer high fatigue resistance, a crucial requirement for FRAM applications, distinguishing them from lead-based perovskites. With a Curie temperature exceeding 400°C, BLSFs are particularly suitable for high-temperature piezoelectric applications, filling the gap left by lead-based materials due to environmental regulations.

Keywords

BLSF, memory device, electrical properties.