

Wet Chemical Synthesis of High Dielectric and Ferroelectric Oxide Thin Films

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From the technological point of view, ferroelectric materials have good prospects for applications in data storage (e.g., in DRAM as capacitors), transducers and actuators. However, there are several issues to be addressed before a ferroelectric system can be considered for device applications. The advantage of solution processed dielectric thin films would be their structural simplicity and the lower processing cost. Larger areas with complicated geometries can also be coated successfully. In this work, a wide variety of ferroelectric and high dielectric materials, such as perovskite SrTiO₃ and BaSrTiO₃ were synthesized by wet chemical synthesis route. Until now, the tetragonal phases of these perovskite samples were synthesized successfully. The reproducibility of synthesis process was confirmed as well by X-ray diffraction pattern and Raman spectroscopy. The capacitance-voltage measurement of the thin films also confirmed the ferroelectric nature of the synthesized samples.