Chaptpr 5

Conclusions

In this thesis, the bistable resistive switching behaviors of the perovskite BTO films fabricated on the modified structures by sol-gel method were demonstrated and improved. The resistive switching BTO films exhibited excellent characteristics such as Nonvolatile, nondestructive readout repeatable, dielectric layer can be fabricated by sol-gel method to lower the cost more and improve the yield, higher resistance ratio, long retention time, and the cost is inexpensive, For the electrical properties, the bistable conductivity memory device has low switching voltage(the lowest is small than 4V).The device can maintain the data at high temperature(85℃) and stressed at 0.3V bias voltage over three hours. The device has a higher leakage current density at OFF-state increasing thermal treatment temperature. The possible conduction mechanisms of pure BTO film are Ohmic conduction for whole on-state and off-state at low field region, and at high field region of off-state, the conduction mechanism is Frenkel-Poole emission. It can be believed that this new type of nonvolatile memory will be a powerful potential for memory product in the future.