

**The effect of surface modification in RuO<sub>2</sub> electrode  
on the phase formation and electrical properties  
of PZT thin film capacitor**

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RuO<sub>2</sub> thin film has been studied as a bottom electrode for ferroelectric thin film in non-volatile memory applications. It is well known that the fatigue characteristics of PZT film on RuO<sub>2</sub> electrode is better than Pt. But, the former has a high leakage current compared to the latter and varies seriously in properties. It seems that this problems originated from the relatively low Schottky barrier height between PZT and RuO<sub>2</sub> and a rough surface of RuO<sub>2</sub>.

In this study, RuO<sub>2</sub> thin film is deposited on SiO<sub>2</sub>/Si by RF magnetron sputtering and the surface of RuO<sub>2</sub> is modified with various methods. PZT thin film is deposited on RuO<sub>2</sub> films having various topographies by the same method. We have studied about the effect of modified surfaces on the phase formation and the electrical properties of PZT thin film capacitor.