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Study the growth of Pb-doped $BiFeO_3$ and strain-relaxed $SrRuO_3$ bottom layer on $SrTiO_3$ (111) substrate. B. Y. CHEN, K. W. LIU, H. CHOU, Department of Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan, SPINTRONICS LAB COLLABORATION — Magnetoelectric multiferroics possess inherent coupling between magnetic and ferroelectric order parameters, which can be used as an indirect medium to switch magnetic moment of adjacent magnetic layer by changing the polarity of the electric field and vice-versa. To date, $BiFeO_3$ is the only magnetoelectric multiferroic material which shows ferroelectric (T_C ~1103K) and antiferromagnetic ordering temperature (T_N ~643K) above room temperature. In our research, we are trying to find out a better growth condition for Pb-doped $BiFeO_3$ and $SrRuO_3$ film on atomically flat $SrTiO_3$ (111) substrates. The polarization of Pb-doped BFO can easily be switched along out of plane direction by electric field. We observed no electric leakage at the domain walls of Pb-doped BFO which is a very distinct feature in this system.

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