

MFISFET 구조를 위한 YMnO₃ Buffer Layer의 영향

Effect of YMnO₃ Buffer Layer for MFISFET Structure

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The Pt/SBT/YMnO₃/Si structure for the transistor gate materials in metal/ferroelectric/insulator/semiconductor(MFIS)-FET was fabricated and electrical properties of MFIS structure with various RTA temperature were investigated. The YMnO₃ thin films deposited on P-type Si(111) substrate at 450°C were not crystallized, however single phase YMnO₃ thin films were formed above 850°C. The C-V characteristics of Pt/SBT/YMnO₃/Si structure were stable above 850°C, and the memory window width of MFIS structure with YMnO₃ was 0.9 V(1 MHz) at 850°C. The leakage current density of Pt/SBT/YMnO₃/Si structure annealed at 850°C was 1.9×10^{-7} A/cm² at 3 V, and value of that was maintained up to 10 V. The good characteristics of diffusion barrier were shown by YMnO₃ thin films annealed at 850°C.