

P-150

CeO<sub>2</sub> 완충층을 이용한 SrBi<sub>2</sub>Ta<sub>2</sub>O<sub>9</sub> 박막의 식각 정지 특성

Etch Stop Characteristics of SrBi<sub>2</sub>Ta<sub>2</sub>O<sub>9</sub> Thin Film by Using CeO<sub>2</sub> Buffer Layer

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Etch stop process of SrBi<sub>2</sub>Ta<sub>2</sub>O<sub>9</sub>(SBT) over CeO<sub>2</sub> in the Inductively Coupled Plasma Reactive Ion Etching (ICP-RIE) was reported in this paper. The etch stop of ferroelectric thin film on the silicon surface without damage is important for the process of the self-aligned gate structure in the fabrication of Single Transistor Type Ferroelectric Random Access Memory. The high vertical etching angle is also necessary for high integration. We investigated the etch rate of SBT, Si and CeO<sub>2</sub> which were used as a buffer layer to improve the interface between SBT and silicon with various Ar/Cl<sub>2</sub> gas mixtures, ICP powers and RF bias powers in the ICP-RIE. The highest etching selectivity of SBT/CeO<sub>2</sub> and SBT/Si was 6.8 and 0.3 respectively. The vertical angle of SBT was 82 degree. The SEM images and XPS surface analyses showed good etch stop characteristics of the buffer layer without damage of silicon surface.