

## RF-Plasma 처리한 MgO 보호막의 스퍼터링 수율 측정 (Measurement of Sputtering Yield of RF-Plasma treated MgO layer)

정원희<sup>1\*</sup>, 정강원<sup>1</sup>, 임연찬<sup>1</sup>, 오현주<sup>1</sup>, 박철우<sup>2</sup>, 최은하<sup>1</sup>, 서유희<sup>1</sup>, 김윤기<sup>1</sup>, 강승언<sup>1</sup>

<sup>1</sup>광운대학교 전자물리학과, <sup>2</sup>한국산업기술대학교 기계공학과

\* jwhee115@hotmail.com

We have measured sputtering yield of radio frequency(RF) Ar-plasma treated and O<sub>2</sub>-plasma treated MgO protective layer for AC-PDP(plasma display panel) using a Focused Ion Beam System(FIB). MgO layer of 1000 Å thickness has been deposited on ITO film coated on glass substrates by using an electron gun evaporator and then have been annealed at 300 °C for 30 minutes. The surface of MgO thin film has been treated by RF plasma. The MgO thin films have been prepared by 3 kinds. They are untreated, RF Ar-plasma treated, and RF O<sub>2</sub>-plasma treated one. Argon and Oxygen gas have been fed for RF discharge and the process pressure has been 110 mTorr. The RF power and treatment time have been 50 W and 10 minutes, respectively. A 1000 Å thickness of Al layer has been deposited on the MgO layer in order to avoid the charging effect during measurements of the sputtering yields. We have obtained the result of the sputtering yields, when 10 kV acceleration voltage of FIB was applied and the emission current 5 μA has been detected at the Faraday cup.

We have observed that the RF plasma treatment on a surface of MgO layer improves the sputtering yield characteristics, hence improves the lifetime of MgO protective layer. When a 10 kV acceleration voltage of FIB has been applied, the sputtering yields of the untreated, the Ar-plasma treated and O<sub>2</sub>-plasma treated MgO were 0.32 atoms/ion, 0.21 atoms/ion and 0.20 atoms/ion, respectively.