PO1037

Remote Direct Current Plasma Sputtering for Various Coating Processes

Jong-Kuk Kim[1], Seunghun Lee[1], Do-Geun Kim[1]

[1]Korea Institute of Materials Science, Changwon, South Korea

kjongk@kims.re.kr

High density plasma assisted sputtering source (HiPASS) has been introduced to develop a remote plasma sputtering. In HiPASS the remote plasma source (RPS) was an electron beam excited plasma using a direct current discharge supplying Ar plasma ($10^{10\text{-}11}$cm^{-3}). Ar plasma was transported from the RPS to a sputtering cathode by external magnetic fields. The transported Ar ions generated a physical sputtering at the negatively biased sputtering cathode. HiPASS has an advantage that sputtering current and voltage were controllable independently. The sputtering current was dominantly controllable by the discharge power of the RPS. And sputtering voltage was applied to the sputtering cathode freely with the fixed sputtering current modulated by the discharge power of the RPS. As the discharge power of the RPS is increased from 2.4 to 8.4 kW, the sputtering current of sputtering cathode (78.5 cm^2) was varied from 1.2±0.1 to 3.6±0.2 A. This was an improved sputtering current comparing with practical sputtering current (1 A at 78.5 cm^2) of radio frequency excited remote plasma sputtering. The remote plasma sputtering with the improved sputtering current could be applied to low voltage high current sputtering for damage-free transparent conductive oxide and barrier film depositions as well as high voltage high current sputtering for hard coating applications.

Keywords
Sputtering
Remote Plasma
DC Discharge