P1-P002

Development of the DC-RF Hybrid Plasma Source

김지훈, 천세민, 강인제, 이헌주

제주대학교

DC arc plasmatron is powerful plasma source to apply etching and texturing processing. Even though DC arc plasmatron has many advantages, it is difficult to apply an industry due to the small applied area. To increase an effective processing area, we suggest a DC-RF hybrid plasma system. The DC-RF hybrid plasma system was designed and made. This system consists of a DC arc plasmatron, RF parts, reaction chamber, power feeder, gas control system and vacuum system. To investigate a DC-RF hybrid plasma, we used a Langmuir probe, OES (Optical emission spectroscopy), infrared (IR) light camera. For RF matching, PSIM software was used to simulate a current of an impedance coil. The results of Langmuir probe measurements, we obtain a homogeneous plasma density and electron temperature those are about 1×1010 #/cm3 and 1∼4 eV. The DC-RF hybrid plasma source is applied for plasma etching experimental, and we obtain an etching rate of 10 μm/min. through a 90 mm of reaction chamber diameter.

Keywords: DC-RF hybrid plasma, Plasma processing