## P1-005

## Multi-hole RF CCP 방전에서 방전 주파수가 미치는 영향

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Recently, multi-hole electrode RF capacitively coupled plasma discharge is being used in the deposition of microcrystalline silicon for thin film solar cell to increase the speed of deposition. To make efficient multi-hole electrode RF capacitively coupled plasma discharge, the hole diameter is to be designed concerning the plasma parameters. In past studies, the relationship between plasma parameters such as pressures and gas species, and hole diameter for efficient plasma density enhancement is experimentally shown. In the presentation, the relationship between plasma deriving frequency and hole diameter for efficient multi-hole electrode RF capacitively coupled plasma discharge is shown.

In usual capacitively coupled plasma discharge, plasma parameter, such as plasma density, plasma impedence and plasma temperature, change as frequency increases. Because of the change, the optimum hole diameter of the multi-hole electrode RF capacitively coupled plasma for high density plasma is thought to be modified when the plasma deriving frequency changes.

To see the frequency effect on the multi-hole RF capacitively coupled plasma is discharged and one of its electrode is changed from a plane electrode to a variety of multi-hole electrodes with different hole diameters. The discharge is derived by RF power source with various frequency and the plasma parameter is measured with RF compensated single Langmuir probe. The shrinkage of the hole diameter for efficient discharge is observed as the plasma deriving frequency increases.

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