Abstract Submitted for the GEC11 Meeting of The American Physical Society

RF capacitively coupled plasma with multi-hole multi electrode HUN SU LEE, Korea Institute of Science and Technology, YUN SEONG LEE, SANG HUN SEO, HONG YOUNG CHANG, Korea Advanced Institute of Science and Technology — In the photovoltaic industry, it is desired to make plasma discharge of high electron density for the deposition of microcrystalline silicon layer, which is a bottle-neck process in the fabrication of thin film solar cell. So multi-hole electrode instead of plane electrode is used to make capacitively coupled discharge and the deposition rate could be increased because of the plasma density increases by the increased ionization by the energetic secondary electron surrounded by sheath region. To further increase the productivity of the process, high frequency and large electrode area is demanded, however the uniformity of the process is degraded by the change. To solve the matter, the concept of dividing a multi-hole electrode into multiple multi-hole electrode is introduced in the presentation. By dividing electrode into several region and differentiating the hole configuration of each region, local hollow cathode effect can be controlled to make more uniform discharge. To verify the feasibility of the concept, an electrode of RF capacitively coupled plasma is divided and the hole configuration of each electrode. And with 13.56MHz power applied to the electrode, the spatial plasma distribution of the discharge is measured.

> Hun Su Lee Korea Institute of Science and Technology

Date submitted: 22 Jul 2011

Electronic form version 1.4