## Abstract Submitted for the GEC10 Meeting of The American Physical Society

Observation of Negative Ions in VHF SiH<sub>4</sub>/H<sub>2</sub> Plasma YOSHINOBU KAWAI, Kyushu University, TSUKASA YAMANE, YOSHIAKI TAKEUCHI, YASUHIRO YAMAUCHI, HIROMU TAKATSUKA, Mitsubishi Heavy Industries Ltd., HIROSHI MUTA, KIICHIRO UCHINO, Kyushu University — Microcrystalline silicon has been widely investigated to reduce production costs of solar cells. Usually VHF plasmas have been used to increase the deposition rate of microcrystalline silicon that is deposited by introducing a small amount of silane gas into hydrogen plasmas. Negative ions are produced in pure silane gas plasma. Thus, it is an important subject in solar cell development to investigate the parameters of SiH<sub>4</sub>/H<sub>2</sub> plasma. A VHF plasma (frequency 80 MHz) was produced using the multi rod electrode. The gas was SiH<sub>4</sub>/H<sub>2</sub> at the pressure of 70 mTorr. We examined the sheath potential as a function of the concentration of SiH<sub>4</sub>/H<sub>2</sub>. Measured sheath potentials agreed with theoretical ones. Then, we increased the concentration and measured the sheath potential. The reduction of the sheath potential was observed for the concentration of 30%, which is due to the existence of negative ions. When negative ions were produced, the electron temperature increased.

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