

Abstract Submitted  
for the GEC18 Meeting of  
The American Physical Society

**Effect of RF bias frequency and gas pressure on discharge mode transition in an inductively coupled plasma** HOWON LEE, CHINWOOK CHUNG, hanyang university — The discharge mode transition occurs as increasing radio frequency (RF) power in the RF-biased Inductively coupled plasma (ICP) . Plasma density is measured using a Langmuir probe with various gas pressures and frequencies. At fixed ICP power, the plasma density has a maximum value at a certain bias power. Also, as changing the pressure and the bias frequency, the RF bias power that maximizes the plasma density is changed. This can be explained by the mode transition according to the RF bias power. A mode transition occurs when the power dissipation in the ion acceleration mode becomes larger than that in the electron heating mode and the ion acceleration mode is determined by the pressure and the bias frequency. This shows that the plasma density is determined by the balance between the electron heating energy and the ion loss energy.

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Date submitted: 19 Jun 2018

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