

Abstract Submitted
for the GEC13 Meeting of
The American Physical Society

E to H Heating Mode Transition and Hysteresis in Inductively Coupled Plasma HYO-CHANG LEE, CHIN-WOOK CHUNG, Department of Electrical Engineering, Hanyang University, Seoul 133-791, Korea — Inductively coupled plasma has been known to have two distinct modes, capacitive mode (E mode) and inductive mode (H mode), and the dramatic changes in the plasma parameters and the hysteresis has been observed on the E to H and H to E heating mode transitions. In this work, we investigate two main points: 1) origin of the hysteresis by considering impedance matching circuit, 2) smooth transition of the plasma density through a comparison between argon and helium. From our experimental effort, it is found that the E to H heating mode transition and the hysteresis are caused by both the system power loss and the nonlinear behaviors of the plasma.

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Date submitted: 14 Jun 2013

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