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Investigation of the driving frequency dependence in the inductively coupled plasma MIN-SEOK KIM, KYUNG-HYUN KIM, CHIN-WOOK CHUNG, Hanyang university — In this study, we investigate the dependence of the power transfer efficiency with the driving frequency in an inductive coupling plasma (ICP). The power transfer efficiency depends on driving frequency in the ICP according to the transformer model. The experimental results show that the efficiency increases as driving frequency increases because the power loss in the plasma decreases as driving frequency increases. Furthermore, at higher driving frequency, the electron density and the electron temperature are higher than lower driving frequency. We compare the derivative of absorbed power and total energy loss with respect to the driving frequency from the power balance equation. The power transfer efficiency depending on the driving frequency is measured by the current sensor. To verify the frequency dependence, electron temperature and electron density were measured through EEPF.

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