

Abstract Submitted  
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**A numerical analysis of plasma non-uniformity in the parallel plate VHF-CCP and the comparison among various model** IKUO SAWADA, Tokyo Electron US Holdings Inc. — We measured the radial distribution of electron density in a 200 mm parallel plate CCP and compared it with results from numerical simulations. The experiments were conducted with pure Ar gas with pressures ranging from 15 to 100 mTorr and 60 MHz applied at the top electrode with powers from 500 to 2000W. The measured electron profile is peaked in the center, and the relative non-uniformity is higher at 100 mTorr than at 15 mTorr. We compare the experimental results with simulations with both HPEM and Monte-Carlo/PIC codes. In HPEM simulations, we used either fluid or electron Monte-Carlo module, and the Poisson or the Electromagnetic solver. None of the models were able to duplicate the experimental results quantitatively. However, HPEM with the electron Monte-Carlo module and PIC qualitatively matched the experimental results. We will discuss the results from these models and how they illuminate the mechanism of enhanced electron central peak.

[1] T. Oshita, M. Matsukuma, S.Y. Kang, I. Sawada: *The effect of non-uniform RF voltage in a CCP discharge*, The 57<sup>th</sup> JSAP Spring Meeting 2010

[2] I. Sawada, K. Matsuzaki, S.Y. Kang, T. Ohshita, M. Kawakami, S. Segawa: 1-st IC-PLANTS, 2008

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