

Abstract Submitted
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The 2nd Harmonic ECR Microplasma for Low Pressure Condition HIROSHI FUJIYAMA, AKIHIRO YUKISHIGE¹, KE YAN, MASANORI SHINOHARA, Nagasaki University, TATSUYUKI NAKATANI, Toyo Advanced Technology — Plasma generation in narrow closed space has been succeeded for the pressure of 0.01Torr and gap length of 500 μm in xenon gas for the 2nd harmonic Electron Cyclotron Resonance (2nd harmonic ECR). Resonant confinement of electrons at the 2nd harmonic ECR leads to interesting micro plasma characteristics: the higher electron density, the lower plasma potential, the lower electron temperature and the effective power absorption against with the well-known ECR plasma. PIC-MC simulation of low pressure micro plasma supported such interesting plasma characteristics obtained by the experiments. It was also investigated on the plasma density and temperature for various ratio of Surface Dimensions/Volume of plasma. In the experiments, it was found that the typical micro plasma characteristics: the higher electron density, the lower plasma potential, the lower electron temperature became remarkable. The ionization degree for the 2nd harmonic ECR plasma in the present research, showed about 10^{-3} by 2 order higher than that of PDP micro plasma.

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