

Abstract Submitted
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2D Fluid Simulation of VHF ICP Source with Parallel Resonance Antenna for Next Generation Etch Processing SUNG HEE LEE, JAE KOO LEE, Department of Electronics and Electrical Engineering, Pohang University of Science and Technology, S.Korea, *G.C.KWON, *J.W.SHON COLLABORATION — Inductively coupled plasma is known for high-density material processing at low pressure. In addition to high density and low pressure, a next generation of plasma sources are needed to control the ion flux and ion-bombarding energy for wafer of over 300mm diameter. However the conventional ICP source with a spiral antenna have a problem of non-uniformity due to large inductance. To overcome the non-uniformity problem, the antenna is segmented and three segments are connected in parallel. The antenna with three segments connected in parallel also causes the non-uniformity problem due to the difference of inductance for each segments. The current in outer segment is larger than that of other segments and it causes the non-uniformity of plasma in radial direction. To reduce the problem, the variable capacitor is connected in series with outer segment. After all, we can overcome the problem of non- uniformity by the proper distribution of current among three segments with variable capacitor. To investigate the discharge phenomenon in the VHF(Very High Frequency) ICP source that consists of the parallel resonance antenna, we have used a two-dimensional fluid simulation and the results from our simulation are compared with experimental data. * Jusung Engineering Co, Gwangju-Gun, Gyeonggi, S.Korea

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