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Two-Dimensional Fluid Simulation of a Radio-Frequency Oxygen Plasma: Comparison of Inductively coupled plasma and Capacitively coupled plasma S.H. LEE, S.M. CHOI, J.K. LEE, Pohang University of Science and Technology, S.Korea, *G.C.KWON, *J.W.SHON COLLABORATION — Oxygen plasma is used for various material processes, including the removal of photoresist patterns and the deposition of thin SiO_2 layers. Negative ion plays an important role in an electronegative discharge. Dissociative attachment of metastable molecules and detachment of metastable atoms are the main reaction for the production and loss of negative $ion(O^{-})$. So, we consider eight species in the oxygen simulation, the positive ions O^+ and $O2^+$ and the negative ion O^- , electron, molecular oxygen, metastable molecular oxygen, atomic oxygen, metastable atomic oxygen. In our simulation, we assume that the temperature of neutral gas is 350K and the density of molecular oxygen is constant. We simulated in various model geometries, including conventional ICP source and VHF(Very High Frequency)_ICP source that consists of the parallel resonance antenna to overcome the problem of non-uniformity and CCP source. From simulation data in above model geometries, we observed the characteristics of pure oxygen plasma with power and pressure and frequency and finally the results from our simulation are compared with experimental data and other group's simulation data.

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