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A Simulation of Gas Temperature Distribution inside and outside near a Microcell Plasma in Ar H. MITSUHASHI, T. YAGISAWA, T. MAKABE, Keio University, Yokohama, Japan — Microcell plasmas are attractive as, for example, emission devices, conductive devices or reactive plasma sources for processes. They have intrinsic characteristics based on a high density plasma. In order to control the efficiency of plasma production, ion acceleration, wall heating etc, it is important to investigate the flow of the external electrical energy to the neutral gas molecules and surface of the microcell. We simulated the spatial gas temperature distribution in a capacitively coupled microcell plasma in Ar sustained at 13.56 MHz. We considered the energy conservation equation of gas molecules under the heat transfer on and radiation from the electrodes and walls. In our previous work, we reported the heating of the chamber wall and the feed gases by the impact of energetic ions. In the present work, we discuss the system under the circumstances of the air outside of the chamber. The dependence of the gas density on the gas heating will be discussed.

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