

Abstract Submitted
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A Simulation of Gas Temperature Distribution in a Microcell Plasma in Ar by Considering Ion Impact on and Radiation Heat Transfer from a Chamber Wall HISAHITO MITSUHASHI, Keio University, TAKASHI YAGISAWA, TOSHIAKI MAKABE — Microcell plasma has been attracting our attention to an emission device, conductive device and reactive plasma source for processes etc. Microcell plasma has intrinsic characteristics, i.e., wall controlled high density plasma. Then, it will be important for us to investigate the flow of the external electrical energy to the neutral gas molecule and surface of the microcell for the purpose of the control of the efficiency for plasma production, ion acceleration, and wall heating etc. In the present work, we simulate the spatial temperature distribution of neutral Ar in capacitively coupled microcell plasma sustained at 13.56 MHz by the consideration of the energy conservation equation of gas molecules under the heat transfer on and radiation from the electrode and wall. We mainly discuss the heating of the chamber wall by the impact of energetic ions and the heating of feed gases in the chamber. The dependence of the gas density on the gas heating will be also discussed.

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