

Abstract Submitted
for the GEC05 Meeting of
The American Physical Society

Stochastic heating in RF capacitive discharges¹ E. KAWAMURA, M.A. LIEBERMAN, University of California Berkeley — There are two main mechanisms for heating electrons in RF capacitive discharges: ohmic and stochastic heating. Plasma resistivity due to electron-neutral collisions leads to ohmic heating while momentum transfer from high voltage moving sheaths leads to stochastic heating. Thus, ohmic heating is mainly a bulk phenomena while stochastic heating is localized in the sheaths areas. We try to understand the nature of stochastic heating and how it depends on various parameters such as pressure, sheath velocity, frequency and density profiles. We are particularly interested in the case of dual frequency discharges in which the high frequency controls the ion flux while the low frequency controls the ion mean energy. We conduct a series of fixed ion particle-in-cell simulations of RF capacitive discharges in order to investigate the electron heating mechanisms.

¹This work was supported by NSF Grant ECS-0139956, and a UC Discovery Grant on Feature Level Compensation and Control.

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Date submitted: 13 Jun 2005

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