

Abstract Submitted  
for the DPP11 Meeting of  
The American Physical Society

**Influence of rf oscillations on the dust particle dynamics in an rf plasma discharge** C. HORN, The University of Alabama in Huntsville, M. DAVOUDABADI, ANSYS, Inc., B. SHOTORBAN, The University of Alabama in Huntsville — The dynamics of a dust particle in an argon rf plasma discharge in a low pressure reactor is investigated. The Lagrangian equations of motion along with the electrical charge equation are solved to track the dust particle from its release at the top of the reactor to its steady-state settling location for particles of different size and different density. The electrical, ion drag, neutral drag, and gravity forces act on the particles. The dependency of the dust particle on rf oscillations is explored through a comparison made between two cases. In the first case, the rf period-averaged plasma variables are utilized to solve the dust particle equations whereas in the second case, the instantaneous rf oscillations of the plasma variables are utilized to solve these equations. The dust particle positions and charges, and the forces acting on it have been compared for two cases and significant differences have been found.

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Date submitted: 12 Jul 2011

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