

Kinetic Simulation of Magnetron Sputter

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The two-dimensional particle simulation of a magnetron sputter based on a realistic magnetic field is presented. Using a kinetic code OOPIC, we obtain the spatial and temporal profiles of plasma density, potential, and velocity distribution functions from which we calculate electron temperature, ion density profile, and current density at the cathode. The result of simulation is compared with the Child-Langmuir law applied to the magnetron discharge[1] and the global model[2]. It is observed that the velocity distribution function of electrons is Maxwellian in the bulk region, but that of ions is non-Maxwellian near the cathode. Time traces of density and potential profiles are also presented.

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- [2] H.J. Lee, and J.K. Lee, Jpn. J. Appl. Phys. 35, 6252(1996),
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