



Dust particle charge in plasma with ion flow and electron depletion

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The charge of micrometer-sized dust particles suspended in plasma above the powered electrode of radio-frequency (RF) discharges is studied. Using a self-consistent fluid model, the plasma profiles above the electrode are calculated and the electron depletion towards the electrode, as well as the increasing flow speed of ions towards the electrode, are considered in the calculation of the dust particle floating potential. The results are compared with those reported in literature and the importance of the spatial dust charge variation is investigated.

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