

Abstract Submitted
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Micro particles of different sizes as electrostatic probes in rf-plasma¹ RALF BASNER, GABRIELE THIEME, FLORIAN SIGENEGER, INP Greifswald, Germany, HOLGER KERSTEN, University Kiel, Germany, GERALD SCHUBERT, HOLGER FEHSKE, University Greifswald, Germany — The plasma is bounded to the surrounding surfaces by the self-organizing structure of a sheath. In plasma diagnostics a relatively large uncertainty exists for the determination of the structure of these plasma sheaths. When a dust particle is immersed in plasma, it is charged by collecting electrons and ions. Negatively charged micro-particles can be confined in a horizontal plasma sheath. The equilibrium position is defined by the balance of the forces acting on the particles. Commonly, the electrostatic and the gravitational force are important in laboratory complex plasmas. Then the equilibrium position above a lower electrode depends mainly on the particle charge, the electric field, and the particle mass. The levitated particles react sensitively with their position to changes in the plasma sheath thus they may serve as electrostatic probes for the electric field. This approach has been successfully demonstrated in front of the powered electrode. In contrast, we present preliminary measurements on the behaviour of charged dust grains in front of the grounded or biased but not powered electrode. These situations are of interest in plasma technology for treatment of substrate surfaces.

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