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Dust Transport in Low Voltage Glow Discharges C.A. ROMERO-TALAMAS, E.M. BATES, W.F. RIVERA, W. BIRMINGHAM, University of Maryland Baltimore County — Results from experiments of dust hopping under different electrode configurations are presented. The purpose of these experiments is to investigate conditions that lead to the dust in a low voltage dusty plasma to be transported and clumped on the lower electrode, by hopping throughout the bottom electrode. The setup consists of a pair of parallel electrode plates that can be oriented with respect to gravity and can have their separation changed without breaking vacuum. The electrodes are suspended by insulating rings in the vacuum chamber, away from walls, and both the top and bottom of each conducting plate is exposed. This configuration allows a glow discharge on all faces of the electrodes, with the glow between the plates having a low enough voltage to charge, but not to levitate the dust grains. Several initial conditions are tested, including the amount of dust on the plate, its distribution, and the presence of any obstacles. This research is relevant to the transport and accumulation of dust in high temperature plasma discharge chambers, as well as in airless planetary bodies.

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