

Abstract Submitted
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Dust levitation in a modulated afterglow plasma¹ NEERAJ CHAUBEY, JOHN GOREE, ANTON KANANOVICH, University of Iowa — The radiofrequency power for a glow-discharge plasma is switched on and off, repeatedly, so that the source of ionization is present only a fraction of the time. In this plasma, we introduce 8.7 micron diameter polymer spheres, to make a single layer dusty plasma. The RF power is modulated on and off at 1 kHz, with a duty cycle $\ll 50\%$. The majority of the time, when the RF power is off, the plasma has an afterglow condition. The dust particles are levitated by the time-average upward electric force, balanced by the downward force of gravity. In our experiment, the upward electric force is provided by the negative sheath, just above the powered electrode. It is found that the single dust layer can be lowered, near the electrode, with this modulation scheme. When the dust layer has a crystalline microstructure, the crystal is preserved but expanded laterally, when we modulate the RF power.

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Neeraj Chaubey
University of Iowa

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