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Laser manipulation experiments in dc glow discharge dusty plasmas¹ MATTHIAS WOLTER, University Greifswald, EDWARD THOMAS, JEREMIAH WILLIAMS, Auburn University, ANDRE MELZER, University Greifswald — The use of lasers to actively manipulate charged microparticles in a plasma has been a valuable tool in the dusty plasma community. However, almost all of these studies have been performed in the strongly-coupled regime in rf discharge dusty plasmas. This presentation reports on the application of laser manipulation techniques to a dc discharge dusty plasma. In these studies, a Nd:YAG laser with a maximum output power of 600 mW is used as the manipulation laser. The manipulation laser uses a voltage-controlled, two-mirror system that allows the laser to be scanned throughout the volume of the dusty plasma. This presentation will highlight three main results. First, it will demonstrate the active manipulation of microparticles in the plasma. Second, it will use the manipulation of the particles at the particle cloud plasma interface to characterize the potential structure at that boundary. Third, it will illustrate the effect of scanning the laser through the particle cloud and observing driven flows.

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