Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Particulate imaging diagnostics in a gas-discharge plasma[1] ANTON KANANOVICH, J. GOREE, University of Iowa — A method of detecting particulates in gas-discharge plasmas is video microscopy with laser illumination. A standard approach in analyzing the video images is the moment-method of measuring the positions of particulates, which makes it possible to measure their concentrations. To also measure their velocities, as a new development in this diagnostic, we employ the Crocker-Weeks[2] algorithm to track particles. We demonstrate this diagnostic method in a capacitively coupled RF argon plasma, under challenging conditions when a cloud of particulates is accelerated to high velocities by the electrical sheath around a moving wire. The micron-sized particulates were electrically levitated in the sheath above the lower electrode in the plasma chamber.

[1]The work supported by U.S. Department of Energy and NASA.
[2]J. Crocker and D. Grier **J. Colloid. Interf. Sci.** 179, 298

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Date submitted: 18 Jun 2018 Electronic form version 1.4