Electrostatic Precipitation for Cleaning Mars Atmospheric ISRU Intakes

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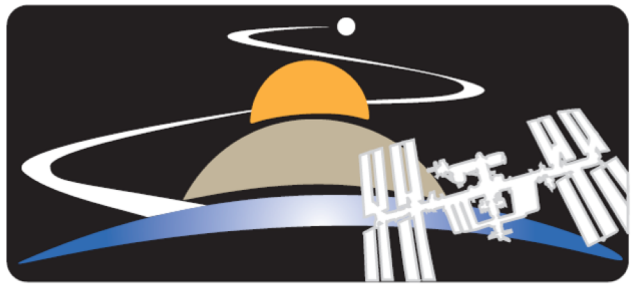
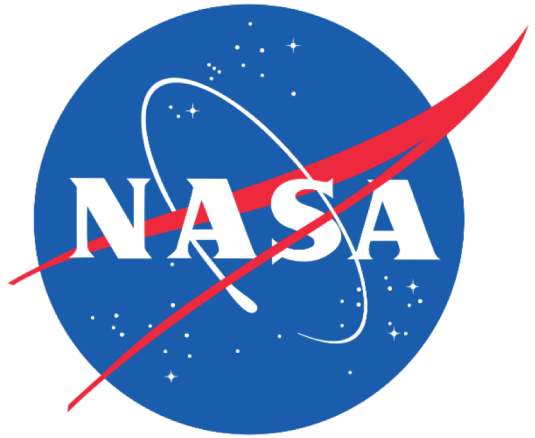
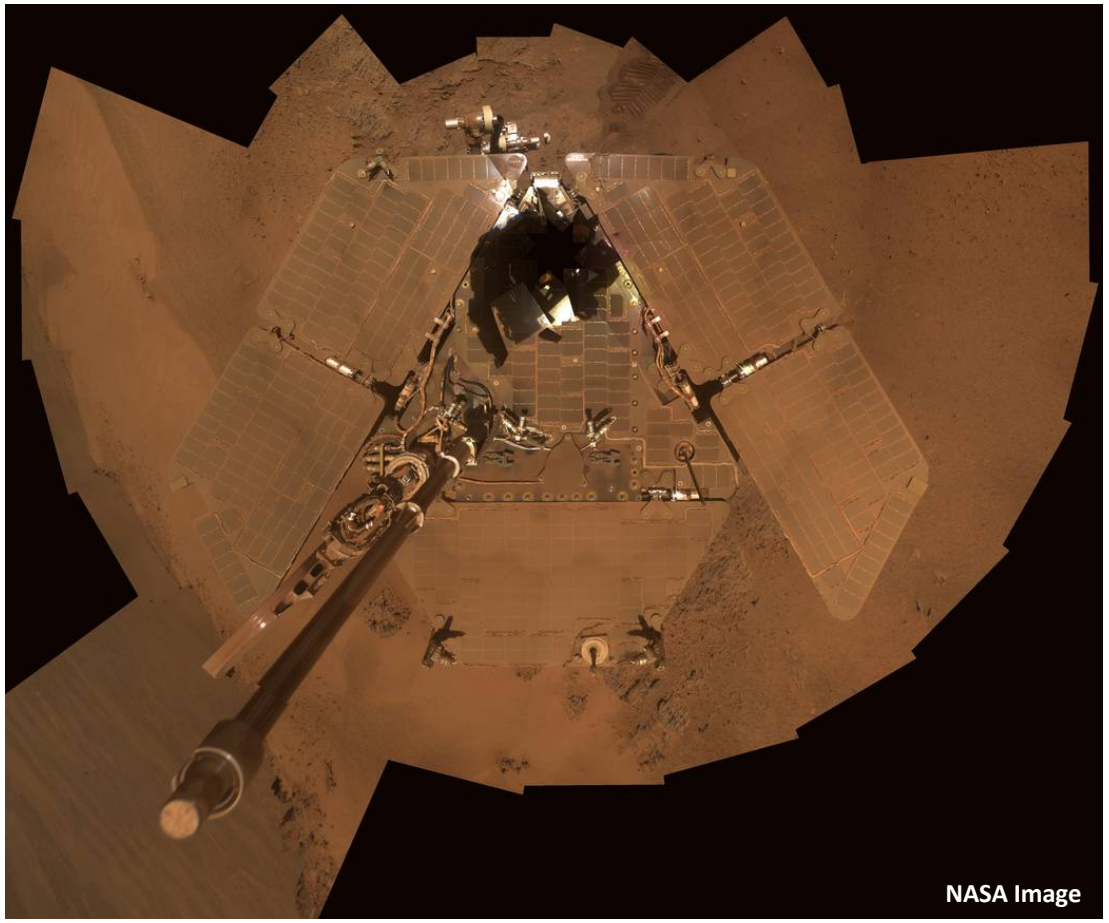




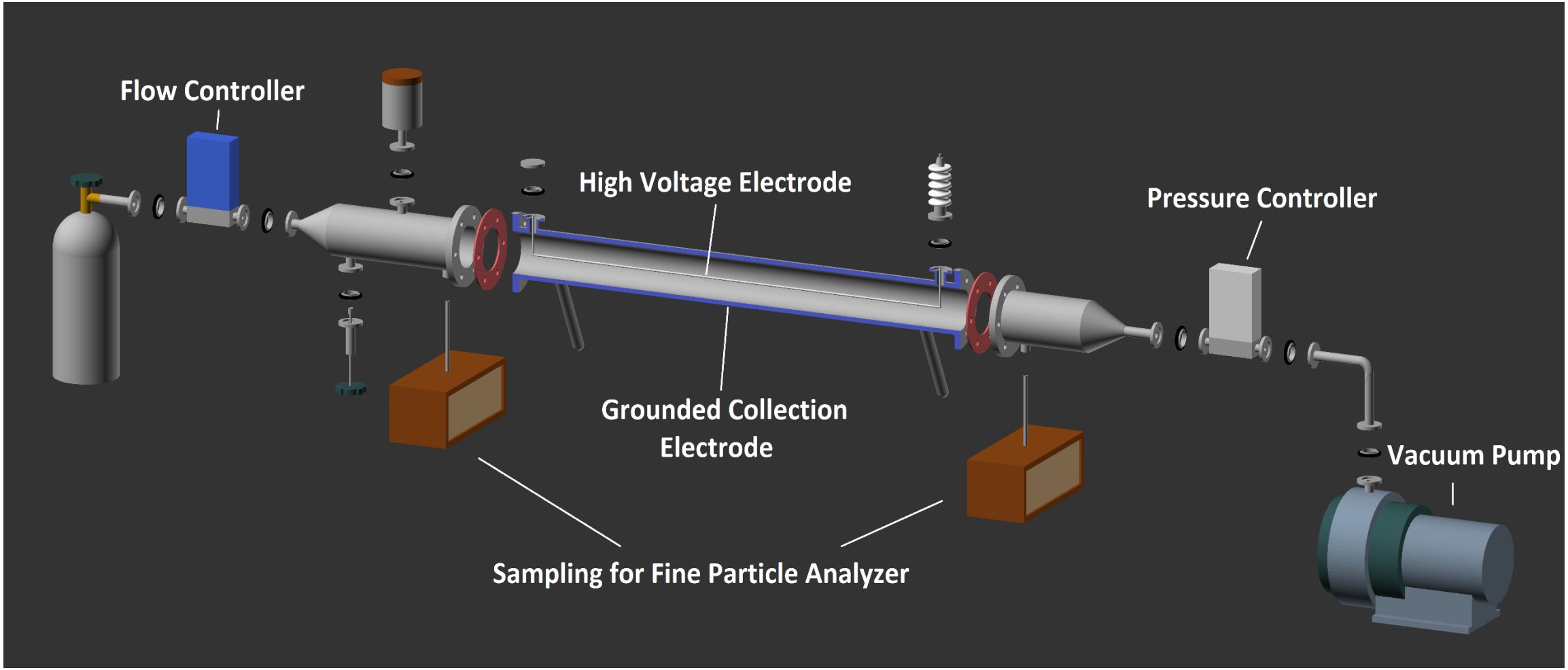
The Dust Problem

Dust coverage on Gene Cernan's EVA suit

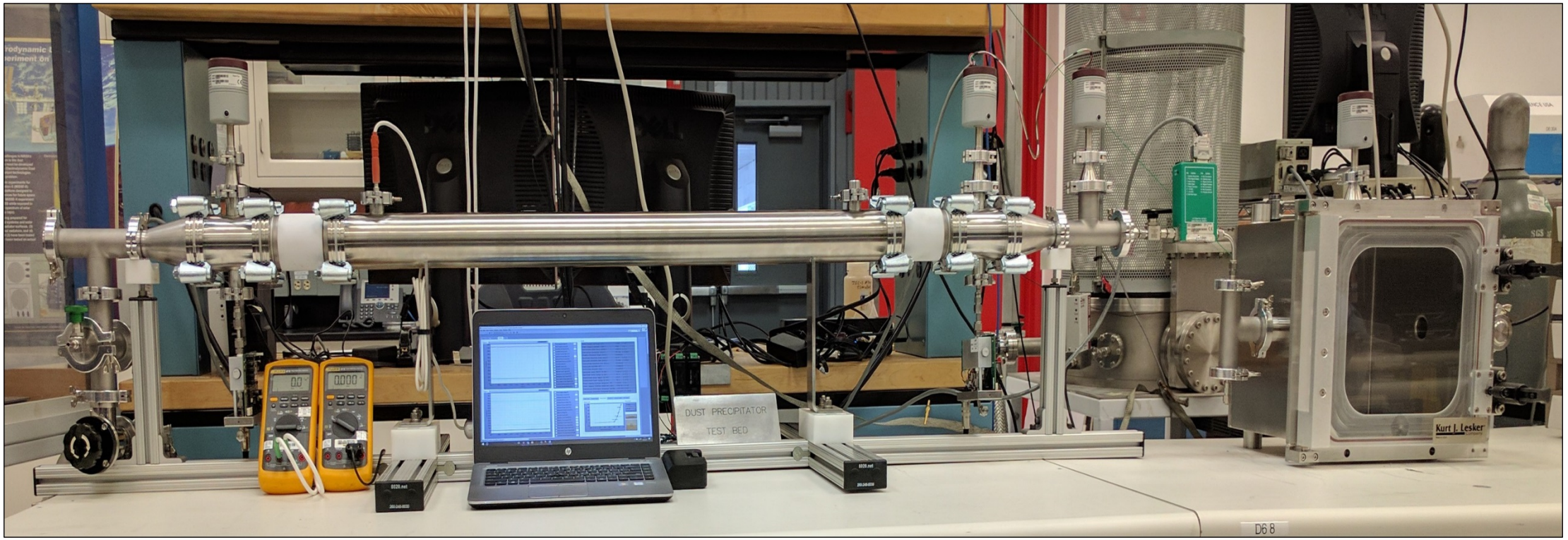


Dust coverage on MER solar panels

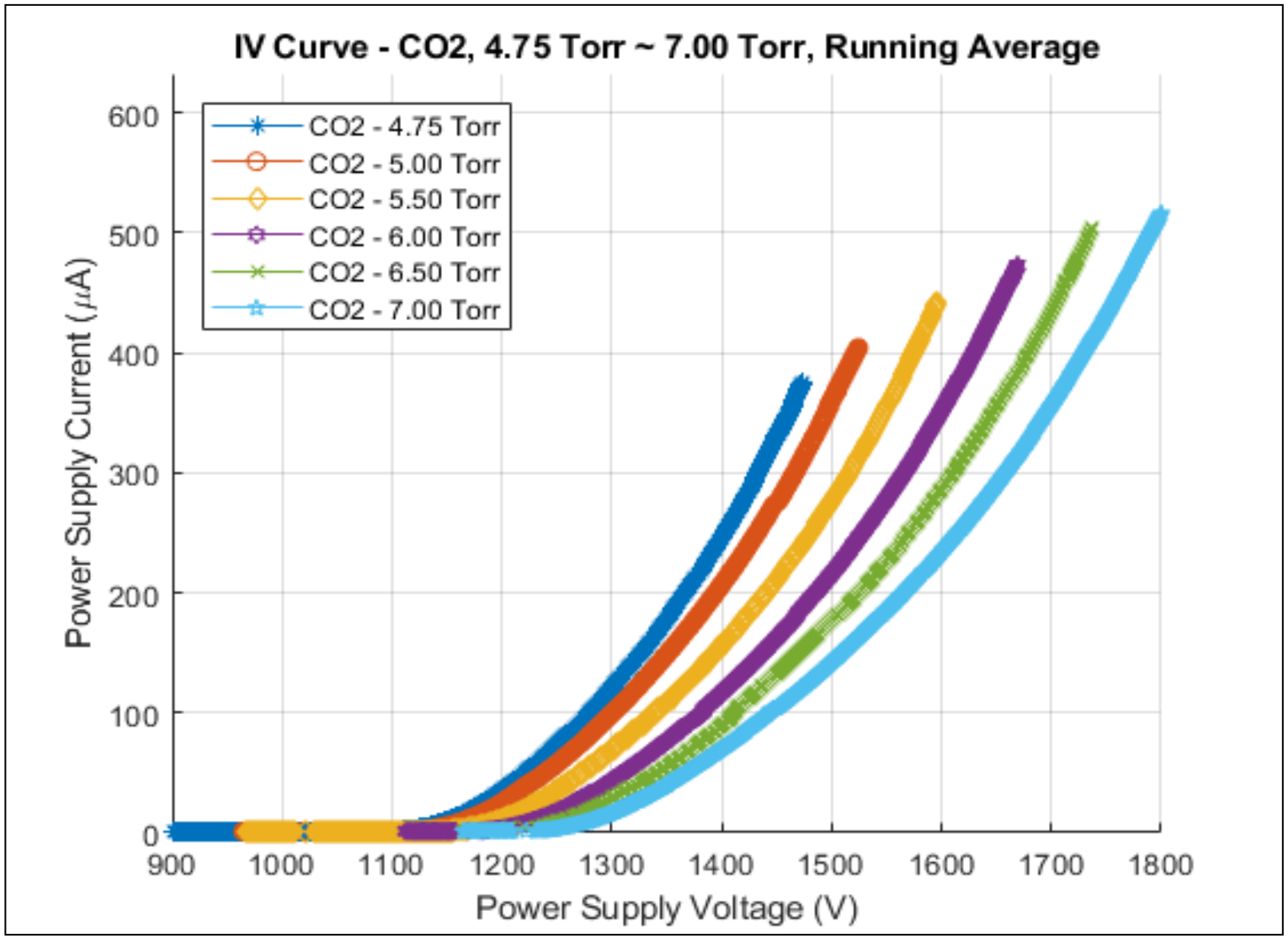
Mars Electrostatic Precipitator Testbed



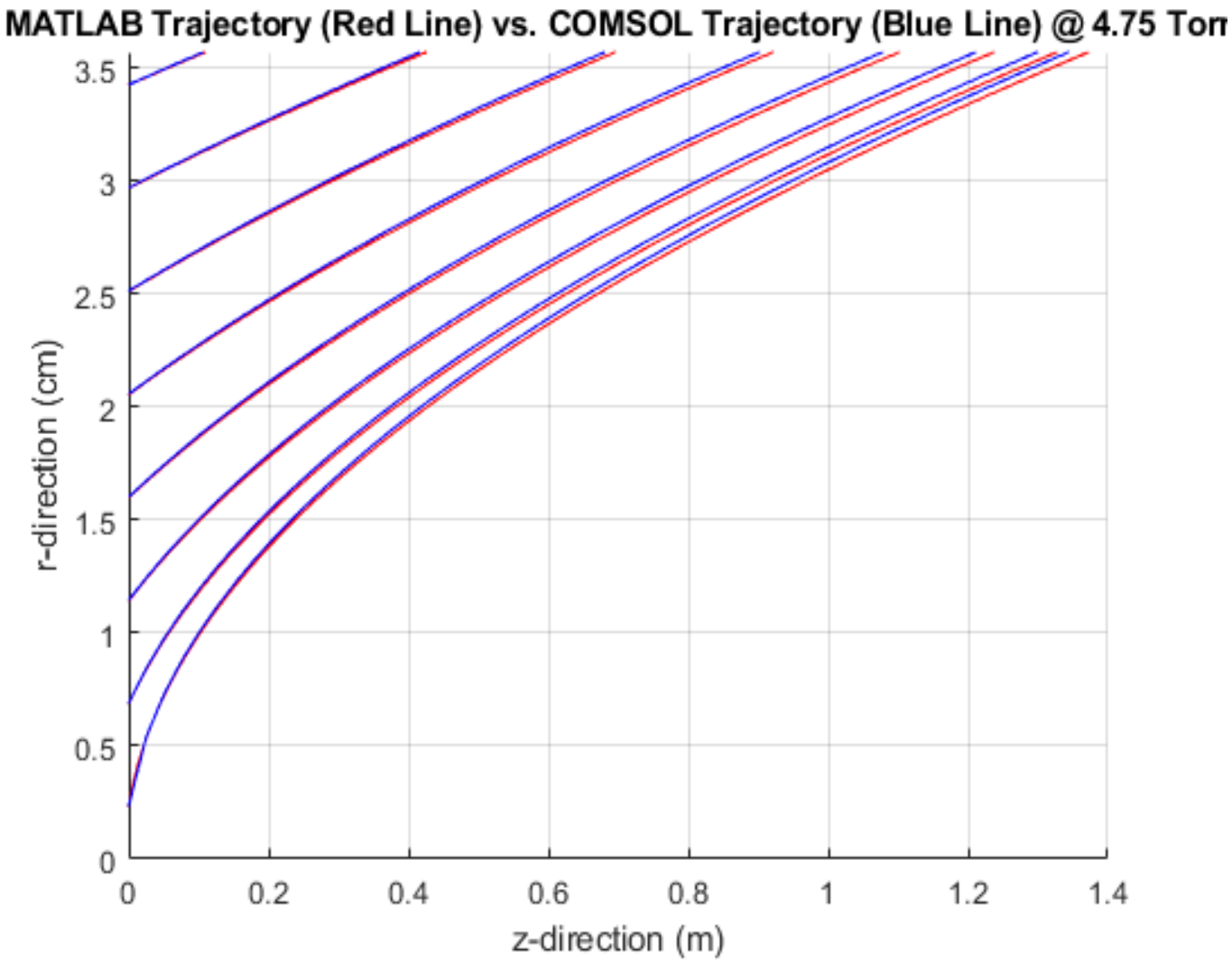
Mars Electrostatic Precipitator Testbed



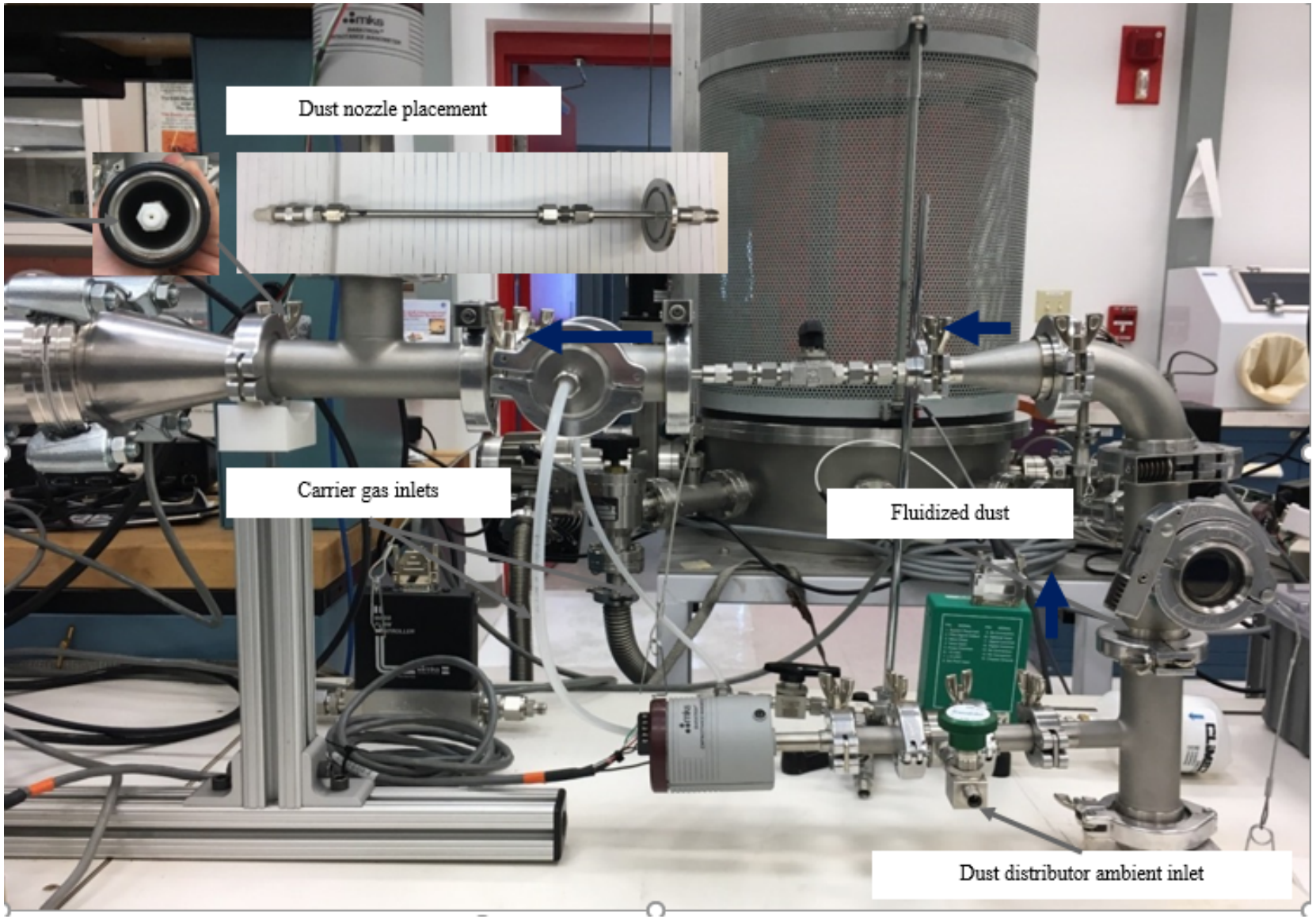
Electrical Characteristics



Modeling and Simulation



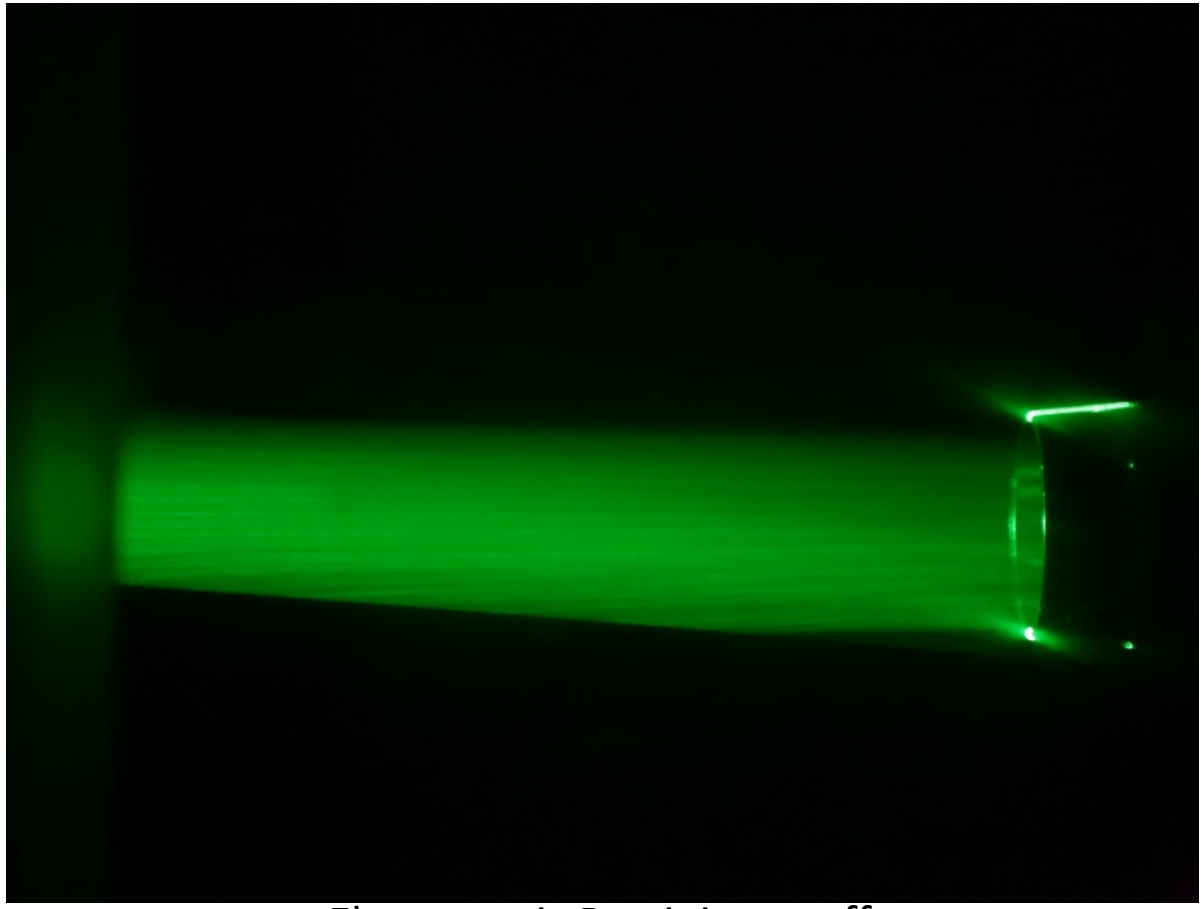
Dust Dispersion Fluidized Bed



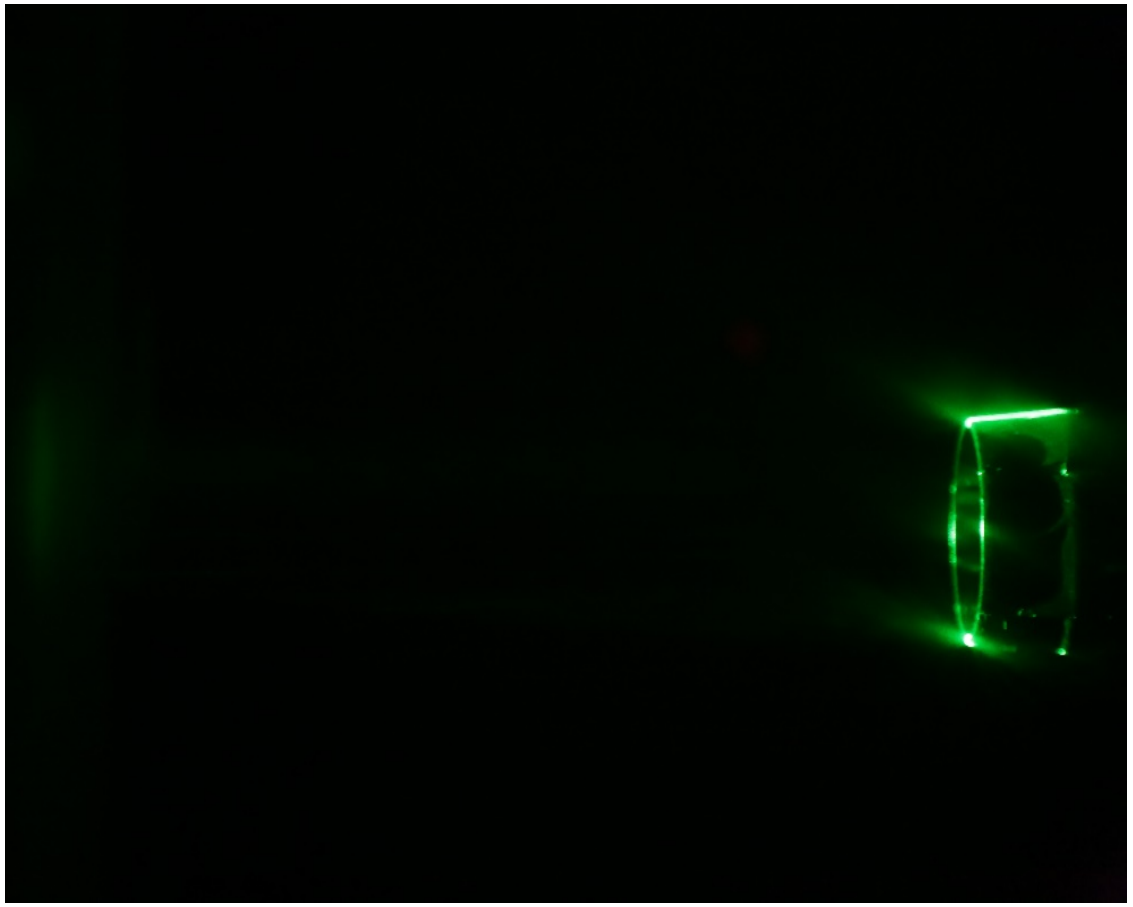
Fine Particle Analyzer

FPA sampling 50 µm diameter particles in ESP testbed

Laser Scattering



Electrostatic Precipitator off



Electrostatic Precipitator on

Future Work

- Testbed will be used to test electrode geometries
- Laser scattering data combined with FPA data
- Consider operational constraints
- Perform long duration testing
- Perform materials analysis