



T0037-P Particle Dispersion System for Microgravity Environments

Problem Statement

- **Technology problem being addressed:** Dispersing granular materials for zero-g experiments on interparticle forces. Important to NASA planetary/earth science, & astrobiology. Important to spinoff technology for particulate science in industry
- **How this flight supports our technology development:** Proof of concept. TRL maturation
- **Beneficiaries:** Science & industry in diverse applications

Technology Development Team

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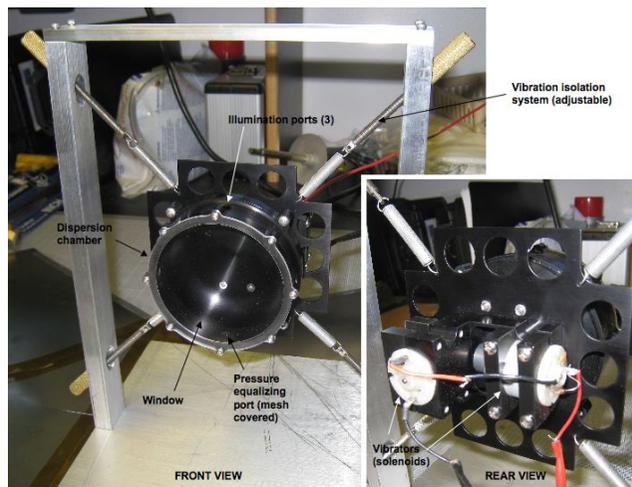
Proposed Flight Experiment

Experiment Readiness: 8/1/ 2012

Test Vehicle Required: Parabolic aircraft

Prior Test Environment: Lab benchtop

Test Apparatus Description: Apparatus is a small vibrating chamber containing dust/sand observed for electrostatic grain interactions. Chamber viewed by camera and operator simultaneously. Potentiometer control of vibration & illumination. No computer interface.



Technology Maturation

- Currently at TRL4. To achieve TRL5, we demonstrate function in appropriate environment, viz, zero-g via proposed parabolic flight. Transition to TRL6 (end-to-end testing) partially achievable by multi-module parabolic flights but mainly by suborbital crew-tended unimodular tests in extended low gravity suborbital flight.
- Require 1 year to step from current TRL4 to TRL6 depending on flight availability. Deadlines set by commercial flight agenda.

Objective of Proposed Experiment

- Objective of flight campaign is to acquire scientific data on Coulombic grain interactions while demonstrating function in "appropriate" (0-g) environment.
- Flight data will be video of grain response. Deviations from predicted response will form basis of further experiment design.