

Space Technology Mission Directorate Game Changing Development Program

Dust Mitigation for Flexible Solar Arrays (DMFlex)

Project Overview

To evaluate the efficacy of **vibratory**, **mechanical** **actuation**, and **electrostatic** dust mitigation techniques.

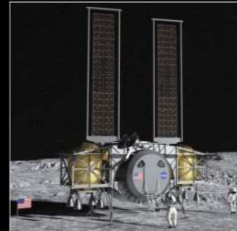
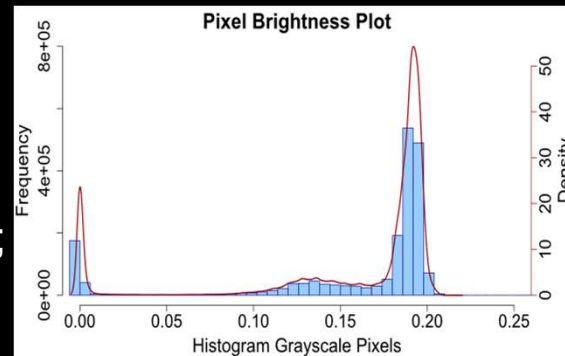


Illustration depicting flexible roll out solar arrays on the Moon

Technical Approach

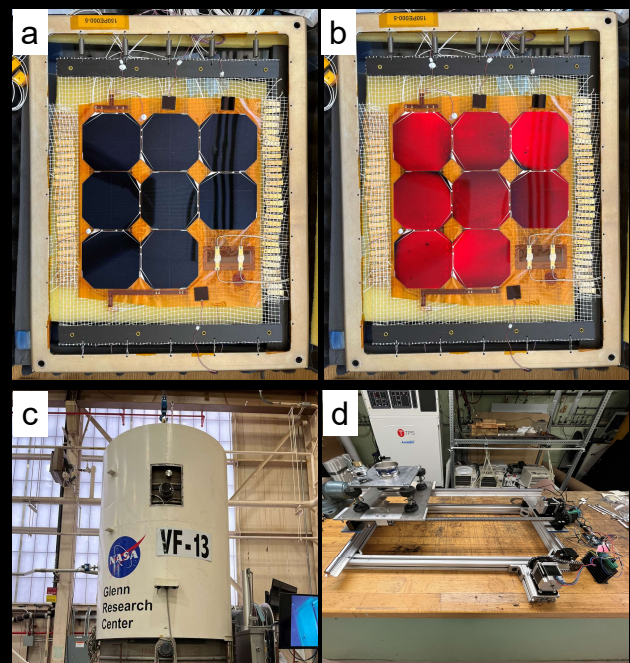
Dust mitigation is evaluated through novel quantitative electroluminescent (EL) imaging; cells are lit by biasing and image processing to quantify changes in brightness due to surface occlusion. EL photos are taken before and after dust deposition and after mitigation.



Luminescing solar cell and the resulting brightness histogram

Contributing Partners and/or Infusion Plans

Maxar Space Infrastructure, partner in the ACO, has a strong interest to design solar arrays capable of surviving dusty environments, e.g. lunar surface. Functional dust mitigation techniques provide a means of sustainable surface power by reducing the need for panel replacement, which is costly and difficult on the Moon.



- a) Flexible solar array coupon
- b) Biased, luminescent solar array
- c) "Dirty" vacuum chamber
- d) Dust deposition system