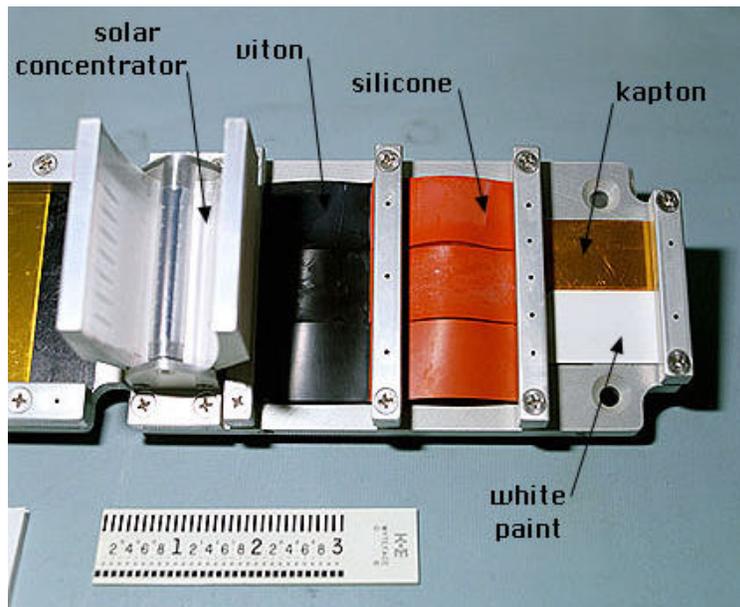




Testing and Optimization of Electrically Conductive Spacecraft Coating

E4



Objective

This task will focus on simulated space environments and effects testing, optimizing stability, and performance of electrically conductive coatings. Candidate coating will be exposed to a combined environment of VUV, UV, protons, and electrons with in-vacu (vacuum) optical solar absorptance measurements. A second test will independently expose the same candidate coating to an environment of low energy charged particles and UV with in-vacu electrical resistivity measurement. Through the utilization of such testing, the understanding of these coatings' space environmental stability will provide sufficient data for their potential use on current and future space programs.

Why Needed

Extensive research has taken place over the last few years to develop a variety of spacecraft coatings with the unique property of being able to conduct surface charge to a substrate of grounding system. The ability to conduct surface charge to a safe point, while maintaining optical properties and performance, is highly advantageous in maintaining operational space-based systems. Without this mechanism, the surface of a spacecraft can accumulate charge to the point that a catastrophic electrical breakdown can occur, resulting in damage to or failure of the spacecraft. Electrically conductive spacecraft coatings will help mitigate many of the concerns NASA and the space industry have for space-based systems.

Point of Contact

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Sponsor

NASA Space Environments and Effects (SEE) Program