

Books and Reports

Evaluation of Charge Storage and Decay in Spacecraft Insulators

Two reports discuss methods for evaluating the magnitude of electrostatic charging that occurs in spacecraft dielectric materials (in particular, polyimides) during prolonged exposure to radiation in outer space. The reports describe experiments on the electrical resistivities and charge-storage properties of polyimide specimens in a dark, evacuated environment, both before and

after 5-megarad exposures to γ rays from cobalt-60. The experiments were designed to measure these properties not under standard conditions prescribed for testing dielectrics in air but, rather, under conditions approximating those in the intended spacecraft applications. The results of the experiments showed that the electrical resistivities of the insulations as determined under these conditions are greater, by a factor of roughly a thousand, than those determined under the standard conditions and that the γ irradiation reduced resis-

tivities marginally.

*This work was done by Arthur Frederickson and Charles Benson of NASA's Jet Propulsion Laboratory and James Bockman of Langley Research Center. To obtain copies of the reports, "Processes for Treating Spacecraft Insulators in Order To Prevent Excessive Dielectric Charging" and "Measurement of Charge Storage and Leakage in Polyimides," access the Technical Support Package (TSP) **free on-line at www.nasatech.com**. NPO-30482*