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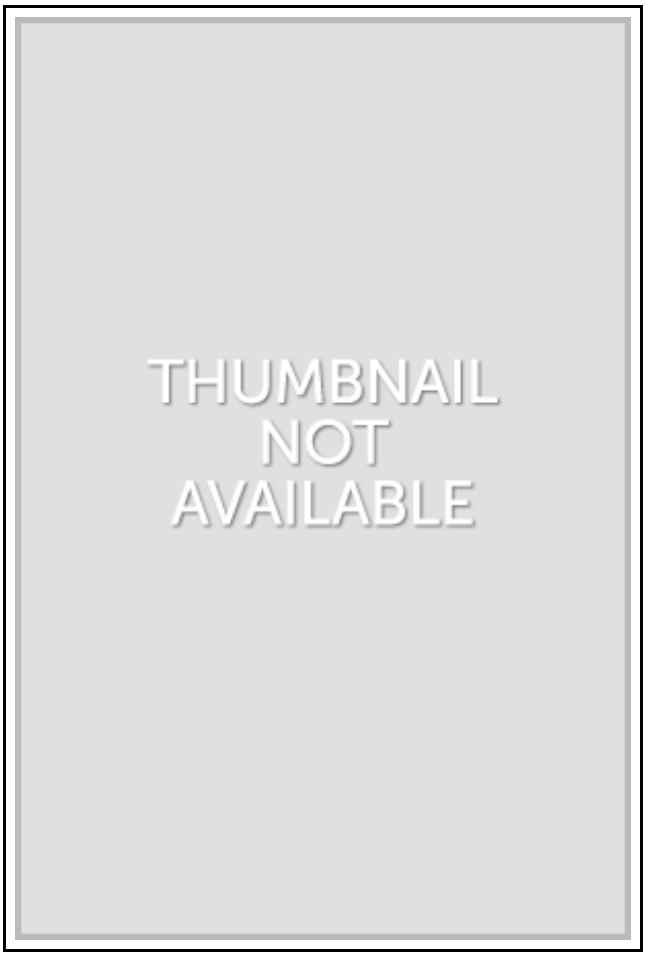

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EXPERIMENTAL RESULTS OF THIN-FILM PHOTOVOLTAIC CELLS IN A LOW DENSITY LEO PLASMA ENVIRONMENT: GROUND TESTS

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 26 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.Plasma ground testing results, conducted at the Glenn Research Center (GRC) National Plasma Interaction (N-PI) Facility, are presented for a number of thin-film photovoltaic cells. The cells represent a mix of promising new technologies identified by the Air Force Research Laboratory (AFRL) under the CYGNUS Space Science Technology Experiment (SSTE-4) Program. The current ground tests are aimed at characterizing the performance and survivability of thin film technologies in the harsh low earth orbital space environment where they will be flown. Measurements of parasitic current loss, chargingdielectric breakdown of cover-slide coatings and arcing threshold tests are performed for each individual cell. These measurements are followed by a series of experiments designed to test for catastrophic arc failure mechanisms. A special type of power supply, called a solar array simulator (SAS) with adjustable voltage and current limits on the supply s output, is employed to bias two adjacent cells at a predetermined voltage and current. The bias voltage is incrementally ramped up until a sustained arc results. Sustained arcs are precursors to catastrophic arc failure where the arc current rises to a maximum value for long timescales often ranging between 30 to 100 sec times. Normal arcs by comparison, are short lived events with a timescale between 10 to 30 sec. Sustained arcs lead to pyrolization with extreme cell damage and have been shown to cause the loss of entire array strings in solar arrays. The collected data will be used to evaluate the suitability of thin-film photovoltaic technologies for future space operations. This item ships from La Vergne,TN. Paperback.

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