

SPRAT XVI  
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ABSTRACT FOR SPRAT:

**COMBINED  
SILICON AND GALLIUM ARSENIDE SOLAR CELL  
UV TESTING**

Douglas Willowby  
Electrical Power Group  
NASA Marshall Space Flight Center  
Huntsville, AL 35812

The near and long-term effect of UV on silicon solar cells is relatively understood. In an effort to learn more about the effects of UV radiation on the performance of GaAs/Ge solar cells, silicon and gallium arsenide on germanium (GaAs/Ge) solar cells were placed in a vacuum chamber and irradiated with ultraviolet light by a Spectrolab XT 10 solar simulator. Seventeen GaAs/Ge and 8 silicon solar cells were mounted on an 8 inch by 8 inch copper block. By having all the cells on the same test plate we were able to do direct comparison of silicon and GaAs/Ge solar cell degradation. The test article was attached to a cold plate in the vacuum chamber to maintain the cells at 25 degrees Celsius. A silicon solar cell standard was used to measure beam uniformity and any degradation of the ST-10 beam.

The solar cell coverings tested included cells with AR-0213 coverglass, fused silica coverglass, BRR-0213 coverglass and cells without coverglass. Of interest in the test is the BRR-0213 coverglass material manufactured by OCLI. It has an added Infrared rejection coating to help reduce the solar cell operating temperature. This coverglass is relatively new and of interest to several current and future programs at Marshall.

Due to moves of the laboratory equipment and location only 350 hours of UV degradation have been completed. During this testing a significant leveling off in the rate of degradation was reached. Data from the test and comparisons of the UV effect on the bare cells and cells with coverglass material will be presented.