

## Study on Sustained Arc Phenomena on High Voltage Satellite Solar Array

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Arcing on satellite solar array due to interaction with space plasma may cause permanent loss of satellite power, once the arc becomes permanent sustained arc. An arc on solar array becomes a secondary arc when solar array circuit is short-circuited and provides energy to the arc plasma. The permanent sustained arc, the final stage of the secondary arc, destroys a solar array string or the complete power circuits at the worst case. To investigate the threshold conditions for the secondary arc formation, laboratory tests are carried out in a xenon plasma chamber simulating LEO plasma environment with an external circuit simulating a spacecraft power system. Solar array coupon panels simulating the hot and return ends of a string circuit are tested for various combinations of string voltage and string current. Experimental results show that formation of secondary arc strongly depends on the string voltage and duration of secondary arc depends on the string current.