

IAF MATERIALS AND STRUCTURES SYMPOSIUM (C2)  
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ATOMIC OXYGEN AND UV RADIATION SYNERGISTIC AGEING EFFECTS ON SOLAR ARRAYS  
OF SAPIENZA UNIVERSITY OF ROME LEDSAT CUBESAT**Abstract**

In the last decade, in the vision of miniaturization of Space Systems and Spacecrafts, the design and manufacturing of cubesat have assumed a primary importance for their capability to test new technology at low cost and weight, without leaving aside innovation, reliability and sophisticated payloads. If the aim of such a trend is to assure high quality and an increasingly longer operational life, the effects of the Space Environment, especially Atomic Oxygen and UV radiation, cannot be ignored. Atomic Oxygen and UV radiation are, indeed, two of the main degradation factors of space systems performances in LEO environment. The Knowledge of performance degradation can help researchers find protective methods to extend the operational life of satellites in LEO environments. In the present work, a Space Environmental characterization of solar arrays, used by S5Lab and Space Systems Laboratory of Sapienza University of Rome during the last LEO cubesat mission, LEDSAT, was carried out, exposing the solar arrays to Atomic Oxygen and UV simultaneously, to evaluate the synergistic effects of such harsh conditions. In order to apply the right Fluence of Atomic Oxygen to the sample, the LEDSAT orbital parameters and lifetime were considered and used for the calculation with the SPENVIS software. The efficiency of solar arrays was analyzed before and after the exposure, to get information about the degradation due to the Atomic Oxygen and UV radiation and eventually correlate the ground test experimental data with the flight data.