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**The Space Survivability Test Chamber.** KATIE GAMAUNT, Utah State University- Logan, HEATHER TIPPETS, Brigaham Young University- Idaho, ALEX SOUVALL, BEN RUSSON, JR DENNISON, Utah State University- Logan
— The Space Survivability Test chamber is a new ground-based research instrument being used for accelerated testing of environment-induced modifications of diverse samples. The chamber simulates space environment conditions, including neutral gas atmospheres and vacuum ($<10^{-5}$ Pa) environments, temperature (˜100 K to >450 K), ionizing radiation, electron fluxes (<10 eV to ˜2MeV), and vacuum ultraviolet through mid-infrared photon fluxes. This versatile test chamber is well-suited for cost-effective testing of complete systems up to the size (<20 cm dia.) of a 1U CubeSat, smaller components or electronics, and individual material samples. Multiple *in-flux* or *in-situ* space survivability and radiation exposure tests can be performed simultaneously, as well as extensive before and after *ex-situ* tests. Currently the chamber is performing a series of radiation experiments using a $Sr^{90}$ beta radiation source which approximately mimics the geostationary high energy electron spectra at ˜4-10X accelerated rates. These measurements will serve to forecast sample radiation damage, predict lifetimes of electronics, and substantiate the ability of the chamber to mimic space environments. Specific tests include: modified efficiency of solar arrays; single event upsets and failure of commercial off-the shelf microcontrollers, memory, and sensors; structural damage and modifications of mechanical and electrical properties; changes in electron transport and arcing of materials; and modification of optical properties of glasses and polymeric materials.

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