## Master's Thesis Defense

## INVESTIGATION INTO SILICONE-SILICATE CONVERSION DUE TO ATOMIC OXYGEN IN LOW EARTH ORBIT ENVIRONMENT

## JUSTIN SELF AEROSPACE ENGINEERING; ASTRONAUTICS



This thesis utilized optical and scanning electron microscopy, Fourier Transform Infrared Spectroscopy, diffuse reflectance spectroscopy, and nonlinear regression statistical techniques to study silicone surface degradation in a simulated Low Earth Orbit environment, along with ISSflown sample analysis. This research provides the space community with a new understanding of how space-grade silicone compounds degrade in the space environment so future designs utilizing these materials may mitigate issues that could arise in silicone performance capabilities that may lead to component or mission failure.

> Friday, June 6, 2025 09:00 - 11:00 AM Engineering IV: Building 192, Room 321