IAF SPACE SYSTEMS SYMPOSIUM (D1)
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THE CRITICALITY OF ROBUST FAILURE ANALYSIS PROGRAMS

Abstract

Since the beginning of the space-age, we have had to answer the questions of "How did this fail?" and "Why did this fail?" Without learning from our failures, our industry would not exist. Therefore, these questions have enabled the space industry to grow while improving the safety and efficiency of our future missions. As more players enter the circle, and commercial space flight becomes a reality, failure analysis cannot fall by the wayside. Instead, we need to be more vigilant than ever. In addition, as advanced materials are put into practice in the industry, such as additively manufactured parts and electronics, we need to become more creative in how we analyze failures and dive into deeper physics and chemistries to understand root cause.

NASA's Marshall Space Flight Center is home to world-renown subject matter experts in failure analysis and state-of-the-art facilities. One of MSFC's specialties in this area is the analysis of electronic, electrical, and electromagnetic (EEE) parts and structures that are used in the aerospace and defense industry's avionics systems. Through this interactive presentation, the audience will take a journey through the failure analysis process, gaining insight into the power of failure analysis, what it is, and how it is conducted through the lens of materials used in aerospace avionics systems. Examples will be provided showcasing the power that a thorough failure analysis program has on the lessons learned in our industry. Finally, a perspective on what the future of failure analysis might look like as we begin to use more complex materials and processes will be provided.