Launch and Deployment of the Misse-6 Payload: State of Utah Space Environment & Contamination Study

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Wake Side

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Launch and Deployment of the Misse-6 Payload:
State of Utah Space Environment & Contamination Study

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The SUSpECS sample holder on the wake side of the International Space Station will investigate the effects that spacecraft charging has on contamination of samples. Four sets of 4 samples (Ag, Al, graphitic carbon, and Kapton XC) are biased at +5 V, -5 V, and -18 V, in addition to the control set grounded to ISS. These samples will be examined to determine the changes in contamination from the space environment that results from the sample charging.

Launch and Deployment Activities

**Objectives**

- Basic research extends our understanding of the materials/space environment interactions.
- Specific knowledge is gain for critical materials in several on-going projects of the team members.
- Valuable collaborations between team members is fostered.
- Analysis capabilities and flight experience are developed that will prove useful not only for follow-up funding for post-flight analysis of the SUSpECS sample set, but for other joint ventures involving reliability and aging of materials in the space environment.

**Integration of SUSpECS in to MISSE-6**

Approximately 123 samples are mounted on three 5 cm by 15 cm panels on both the ram (75) and wake (50) sides of the ISS. They have been carefully chosen to provide needed information for a broad cross section of prototypical materials used on the exteriors of spacecrafts. The materials are exposed for 9-12 months stay by astronauts Bob Behnken on EVA 5 March 22nd 2008 with the help of a hammer.

**Material Samples List**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Material</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Passive UV Exposure</td>
<td></td>
<td></td>
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<tr>
<td>Grounded Guard Plate</td>
<td></td>
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<tr>
<td>+5 VDC</td>
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<td></td>
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<tr>
<td>-5 VDC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-18 VDC</td>
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</tbody>
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**Scientific Solutions** Inc has technology that uses nematic liquid crystal as the tuning medium in Fabry-Perot interferometers. The liquid crystal Fabry-Perot (LCFP) has passed temperature and vibration testing but the final test will be to see if it can withstand the atmosphere of lower earth orbit (LEO).