MOC Monitoring

Introduction

Lucideon is a materials development and commercialisation company that has strong expertise across a range of materials systems. With the company's vision "to make the world a materially better place", Lucideon brings together the capability and expertise rarely found in one company: materials science skills, formulation knowledge, and testing know-how.

The testing and characterisation capabilities at Lucideon cover a wide range of needs and demands, from surface analysis to extreme temperature mechanical and thermo-physical property testing. Combining these facilities and many years of expertise, Lucideon can provide material solutions.

Solutions

MOC Monitoring is the monitoring of airborne organic species that could contaminate the product. This is performed by placing witness plates in appropriate areas of the cleanroom, where high level of contamination is most likely. These are left for a known period of time (typically monthly and quarterly) and sent to a laboratory for analysis.

Challenges

Contamination can have detrimental effects on products that are used in space. For example, optical properties of vehicle and payload surfaces, and spacecraft performance are impacted, particularly for sensitive optics. Therefore, products for space are manufactured in cleanrooms.

Consequently, European Space Agency (ESA) request the definition of a Cleanliness and Contamination Control Plan (C&CCP). This includes Molecular Organic Contamination (MOC) monitoring, for the manufacture of appropriate hardware.

Capabilities

Lucideon has recently developed and validated a cleanroom monitoring method, using witness plates, that is capable of accurately measuring and reporting to a limit of < 50 ng/cm2 using FTIR in accordance with the Indirect method described in ECSS-Q-ST-70-05C.

Plates will be cleaned at Lucideon and placed into transport cases, tightly wrapped in aluminium foil and placed into an ESD bag (as per the ECSS protocol) and shipped to the cleanroom for placement. The lid is then taken off the transport case, left for the required amount of time, re-packed and submitted to Lucideon for analysis.

The results can then be used by the manufacturer to prove that they are complying with the C&CCP. There is a drive for future missions to have lower contamination tolerance within the manufacturing process and this service is well placed to support this.

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providing material solutions