From Spaceflight to EUV Lithography: High Reliability Outgassing and RGA Testing

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Ensuring material cleanliness and controlling volatile contamination are critical requirements across aerospace, semiconductor, and high reliability manufacturing. This presentation highlights the integrated testing capabilities of Oneida Research Services (ORS) in evaluating outgassing behavior, evolved gas signatures, and molecular contamination risks using three complementary methodologies: ASTM E595, Ultra High Vacuum Evolved Gas Analysis (UHV EGA), and the ASML RGA testing procedure (GSA 07 2221).

ORS operates one of the most advanced outgassing laboratories in the United States, including an ISO 7 certified RGA test facility for ASML standard GSA 07 2221. The talk will demonstrate how ORS combines high vacuum mass spectrometry, thermal desorption methods, and standardized aerospace protocols to characterize, outgassing rates for moisture, volatile and non-volatile gases, Total Mass Loss (TML), Collected Volatile Condensable Materials (CVCM), Water Vapor Regain (WVR), and detailed molecular species profiles across a wide range of materials and components.

Case studies will illustrate how these methods support contamination control for space hardware, hermetic packaging, and EUV lithography environments. Attendees will gain insight into how ORS's multi platform analytical approach provides actionable data for material selection, process qualification, and supplier certification in the most demanding industries.