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***MCIF Capabilities***



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# Molecular Contamination Investigation Facility (MCIF)

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**February 2013**



## Molecular Contamination Investigation Facility (MCIF)



### MCIF Facility for Measurement of Material Outgassing/Deposition Kinetics

- This facility was used to guide the development of ASTM E 1559
- Multiple Quartz Crystal Microbalances (QCMs), large sample and spectral effects capability
- Several instrumented, high vacuum chamber systems are used to evaluate the molecular outgassing characteristics of materials, flight components and other sensitive surfaces

### Applications

- Test materials for spacecraft/instrument selection
- Test flight components for acceptable molecular outgas levels
- Determine time/temperature vacuum bake-out requirements
- Data used to set limits for use of materials and specific components
- Provide Input Data to Contamination Transport Models

*-Applied to numerous flight projects over the past 20 years*



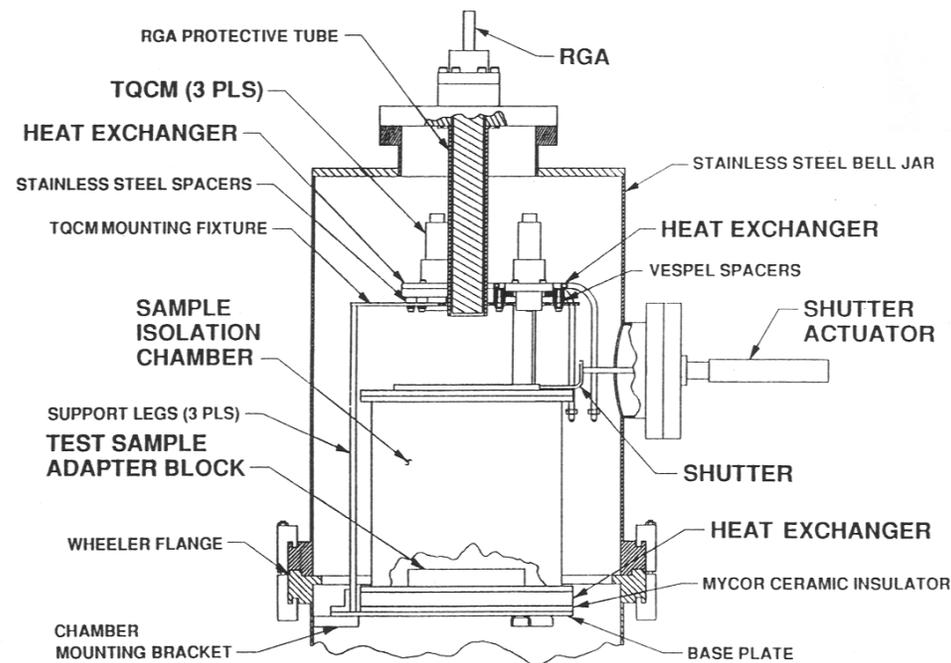


## MCIF Outgassing/Deposition Kinetics



Data from the MCIF can be used to evaluate molecular contamination concerns on sensitive surfaces, plus contaminant rate reduction can be calculated to provide time and temperature bakeout requirements for that specific hardware or material.

- Three Quartz Crystal Microbalances (QCMs)
- 140 degree view factor
- Sensitivity of  $1.73 \times 10^{-9} \text{ g/cm}^2 \text{ Hz}$ .
- Temperature Control: K-Cell, Range: -10 C to +150 C



These laboratory activities are carried out at the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration. Copyright 2013 California Institute of Technology. Government sponsorship acknowledged.