



Smoke Aerosol Measurement Experiment - Reflight (SAME-R)



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Objective:

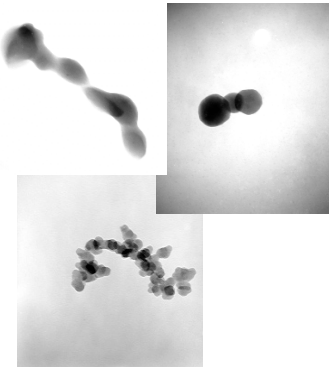
- ◆ Results from the initial SAME tests provided the first quantitative determination of the size of smoke particulate from low-gravity sources
 - Used to define design requirements for future spacecraft smoke detectors
- ◆ Reflight will obtain particle morphology data to reduce uncertainty in size distributions
 - Explore differences between SAME and previous Shuttle experiments (Comparative Soot Diagnostics)

Relevance/Impact:

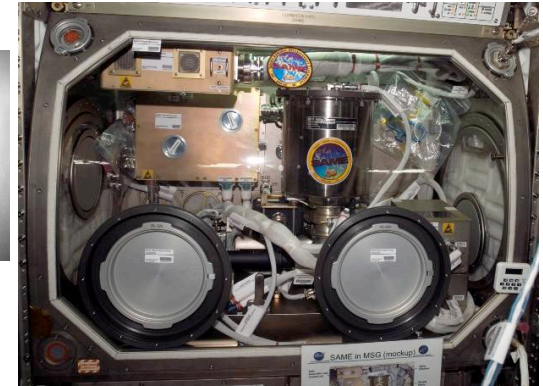
- ◆ SAME-R will provide data required for the rational development of fire particulate detectors on exploration vehicles and habitats.

Development Approach:

- ◆ SAME-R will utilize the SAME hardware currently on-orbit along with refurbished/new Sample Carousels and Thermal Precipitators and a new diagnostics unit.
- ◆ After initial setup by the crew, the experiment will utilize uplinked parameters for autonomous operations. Consumables will be periodically changed out by the crew.



Images of microgravity particulate from overheated Teflon & Kapton & candle soot.



SAME in the MSG

ISS Resource Requirements

Accommodation (carrier)	Microgravity Science Glovebox
Upmass (kg) (w/o packing factor)	11.7 (SAME-R Only)
Volume (m³) (w/o packing factor)	0.15 (Entire H/W Complement)
Power (kw) (peak)	0.230
Crew Time (hrs) (installation/operations)	14
Autonomous Ops Time (hrs)	60
Launch/Increment	ULF-4/Increment 24

Project Life Cycle Schedule

Milestones				CDR (ERB)	Safety	SAR	FHA	Launch	Ops	Return	Final Report
Actual/ Baseline				11/09	12/09	12/09	12/09	5/10	6/10	7/10	TBD
Documentation	Website: http://spaceflightsystems.grc.nasa.gov/Advanced/ISSResearch/MSG/SAME-R/ eRoom: (M) SAME				SRD: 10/09 (Planned for Baseline) EDMP: 11/09 (Planned for Baseline)			Project Plan: N/A SEMP: ISS Research SEMP			