



Structure and Liftoff In Combustion Experiment (SLICE)

Website: <http://spaceflightsystems.grc.nasa.gov/Advanced/ISSResearch/MSG/SLICE>



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Objective:

- ◆ SLICE significantly extends the SPICE investigation by introducing additional objectives that relate to flame stability and structure rather than the smoke point.
- ◆ The SLICE objectives will provide experimental results that will allow optimization of the ACME Coflow Laminar Diffusion Flame experiment, increasing its scientific return.

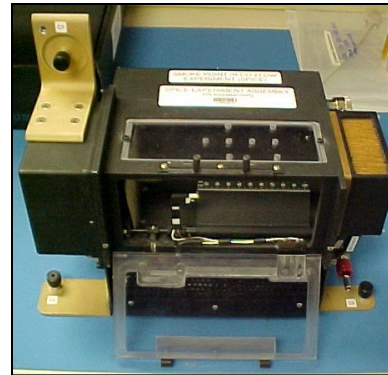
Relevance/Impact:

- ◆ Improved design capability through the validation of combustion models over a wider parameter range.
- ◆ Improved understanding of and ability to predict heat release and emission in microgravity fires.

Development Approach:

- ◆ The SLICE experiment will use the on orbit SPICE Experiment Assembly to conduct the SLICE science.
- ◆ The SPICE Engineering model hardware is used for SLICE ground testing purposes.
- ◆ Crew required to set up and operate the experiment. Video and data down-linked to the ground for evaluation.
- ◆ SLICE is scheduled to launch on Shuttle STS-133/ Flight ULF-5 and operate during Inc 26-27 on board ISS in the Microgravity Science Glovebox facility.

Glenn Research Center



SPICE Experiment Assembly



Figure shows the microgravity flame lifting phenomena

ISS Resource Requirements

Accommodation (carrier)	Microgravity Science Glovebox
Upmass (kg) (w/o packing factor)	18
Volume (m³) (w/o packing factor)	0.096
Power (kw) (peak)	0.05
Crew Time (hrs) (installation/operations)	23 hours crew time
Autonomous Ops (hrs)	N/A (all hands on crew ops)
Launch/Increment	ULF-5/Inc 25

Revision Date: 05/11/2010

Project Life Cycle Schedule

Milestones	SCR	RDR	PDR	CDR	SR/DR	Flt Safety	FHA	Launch	Ops	Return	Final Report
Actual/ Baseline	N/A	N/A	N/A	8/1999	4/2010	5/2010	6/2010	9/2010	Inc. 26/27	OPS + 4 m	Return +12m