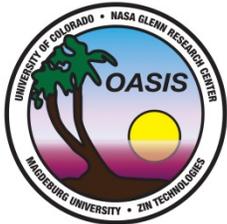




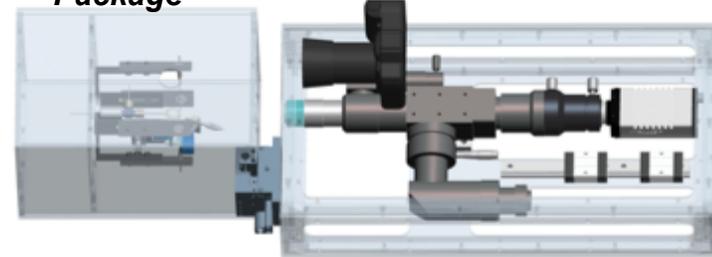
Glenn Research Center

# Observation and Analysis of Smectic Islands in Space (OASIS) WBS: 904211.04.02.30.13



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## Experiment Package



**Micro Observation and Illumination Assembly**

## Objective:

- To exploit the unique characteristics of freely suspended liquid crystals in a microgravity environment to advance the understanding of fluid state physics.

## Relevance/Impact:

- Space helmets could use ferroelectric liquid crystal micro-displays. The process of making flawless and very fast rate data updating projection display could best be achieved by detail studying of annealing dislocations systematically only achievable in space.
- Generating well aligned, very high speed electro-optic devices.

## Development Approach:

- The OASIS flight instrument will be designed to interface and operate within the MSG.
- OASIS will consist of 4 modules that will support nano meter thin freely suspended bubble film formation, sub pico liter droplet injection and external E field perturbation and dynamic oscillation of the bubble.
- It will study basic 2D hydrodynamics/fluid physics, probe droplet/island diffusion, hydrodynamic interactions, and droplet/island coalescence.

## ISS Resource Requirements

Accommodation (carrier)	Microgravity Science Glovebox (MSG)
Upmass (kg) (w/o packing factor)	57.7 Kg
Volume (m <sup>3</sup> ) (w/o packing factor)	0.07
Power (kw) (peak)	0.675kw for OASIS / MSG
Crew Time (hrs) (installation/operations)	5 Hours
Autonomous Operation	2 months
Launch/Increment	TBD

## Project Life Cycle Schedule

Milestones	SCR	RDR	PDR	CDR	PIII FSR	SAR	FHA	Launch	Ops complete	Final Report
OASIS	5/2008	4/11	3/12	4/13	5/14	6/14	6/14	9/14	2/15	2/16