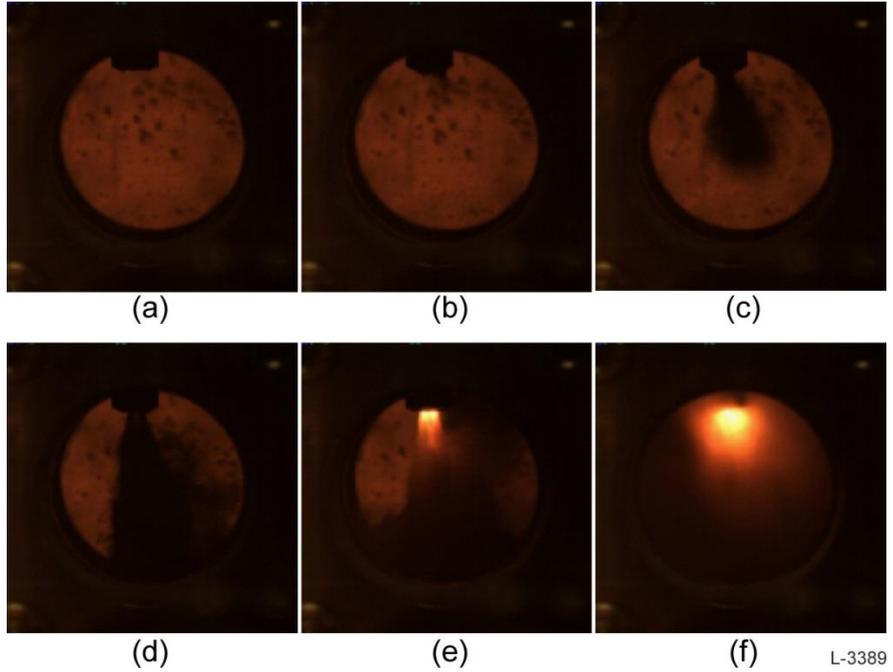


Green Liquid Monopropellant Thruster for In-Space Propulsion Physical Sciences Inc.

PI: Prakash B. Joshi, Proposal # S3.04-8888

OBJECTIVES

The Phase II program goal was to develop a unique chemical propulsion system for the next generation NASA science spacecraft and missions that (a) employs a high density, reduced toxicity ionic liquid monopropellant that is easy to store, (b) incorporates a liquid hypergol-initiated ignition system without the need for a catalyst to ignite or sustain combustion, (c) will have long operating life due to the elimination of the catalyst, (d) will be simpler, highly compact, and lightweight, and (e) would require minimal thermal control due to the low melting point and wide liquidus range of the monopropellant. The Phase II objective was to show feasibility of a catalyst-free, hypergol assisted ionic liquid monopropellant thruster concept.



L-3389

ACCOMPLISHMENTS

NOTABLE DELIVERABLES PROVIDED

- Experimental data on integrated injector-igniter-combustor testing
- Laboratory model of a ~ 5 N thruster incorporating the above integrated element
- Material compatibility data for the liquid hypergol

KEY MILESTONES MET

- Quarterly progress reports
- Final report
- Submittal of above deliverables

FUTURE PLANNED DEVELOPMENTS

PLANNED POST-PHASE II PARTNERS:

Elements of the injection scheme developed in Phase II are being applied to the hydrazine-replacement Emergency Power Unit PSI is developing for Lockheed Martin Aeronautics.

PLANNED/POSSIBLE MISSION INFUSION:

Elements of the injection scheme developed in Phase II are being applied to the hydrazine-replacement Emergency Power Unit PSI is developing for Lockheed Martin Aeronautics.

PLANNED/POSSIBLE COMMERCIALIZATION

Elements of the injection scheme developed in Phase II are being applied to the hydrazine-replacement Emergency Power Unit for aircraft PSI is developing for Lockheed Martin Aeronautics. The application is intended for the F-16 aircraft.

CONTRACT (CENTER)

Contract No. NNX12CA24C, NASA Glenn Research Center

SOLICITATION-PHASE:

SBIR/STTR 2010-1 - Phase II

SUBTOPIC

S3.04 Propulsion Systems

TA:

Spacecraft and Platform Subsystems

TRL	1	2	3	4	5	6	7	8	9
			IN	OUT					

SBIR/STTR

Small Business Innovation Resources / Small Business Technology Transfer