

MURI - Spray and Combustion of Advanced Hypergolic Propellants, S. Heister, Purdue

Objectives: Improve understanding of fundamental processes pertinent to propulsion systems using gelled hypergols. Provide validation data and submodels for advanced combustion codes.

Scientific Challenges.

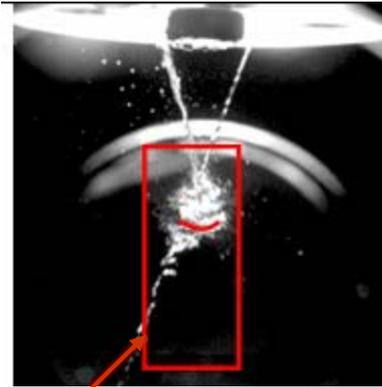
- Atomization/vaporization of non-Newtonian fluids
- Combustion and kinetics contributions relative to fluid mechanic issues
- Ignition of hypergolic fluids

Major Accomplishments:

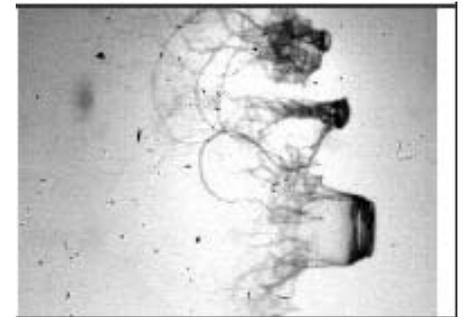
- Completed contract negotiations in June, 2008.
- Kickoff meeting to be held on 29 Sept., 2008 at Penn State University

Personnel: 12 Faculty from Purdue, UMass and Iowa State Universities with 15 graduate students and 3 postdocs

Processes in Hypergolic Ignition Events



Impact waves and primary atomization



Atomization/vaporization of gelled drops

Army Relevance: Improved range and operability of tactical missiles

Funding profile: FY08-FY12 \$6.25M

Grant: W911NF-08-1-0171

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