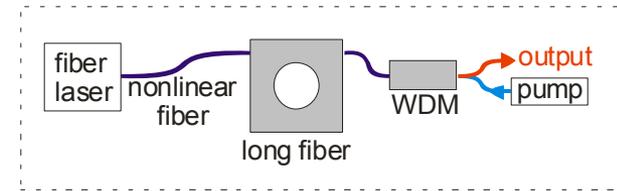


Wavelength-Agile Rocket Propulsion Sensor

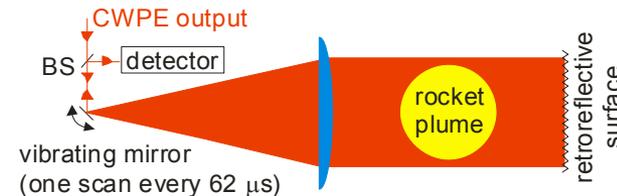
PI: Martin J. Chiaverini / ORBITEC – Madison, WI
 Proposal No.: 02-II 020068

Description and Objectives

ORBITEC and the University of Wisconsin-Madison propose to continue the development of a low-cost, non-intrusive, wavelength-agile optical rocket propulsion sensor (WORPS) to interrogate rocket exhaust plumes and cryogenic fluid properties. The innovative sensor system uses an amplified Chirped White Pulse Emitter (CWPE) to generate high-power wavelength-agile light for probing rocket plumes. It also uses a high-power wavelength-multiplexed differential absorption scheme for probing LOX lines. The plume sensor provides planar images of gas temperature and species concentrations.



CWPE: approx 30 cm x 30 cm x 7 cm
Advanced CWPE



Setup for Planar Imaging

Approach

In Phase II, the sensor system will be refined and extensively tested with both rocket plumes and LOX flows. A prototype sensor system will be delivered to NASA.

Subcontractors/Partners

University of Wisconsin-Madison
 PM: Prof. Scott T. Sanders

Schedule and Deliverables

In addition to the status and final report deliverables, a prototype WORPS system will be delivered at the end of the contract.

NASA & Commercial Applications

NASA and Government test facilities, civil and military aircraft, internal combustion engine research and emissions checking, industrial burners and furnaces, University research facilities.