



UCI ROCKET PROJECT

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UCI Samueli
School of Engineering

BACKGROUND

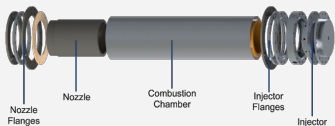
- The UCI Rocket Project is an undergraduate, student-led team pushing the boundaries of collegiate rocketry through the design and fabrication of liquid fueled rockets
- Developing skills and experience needed to excel in the aircraft, launch vehicle, and spacecraft industries
- Develop an alumni network through the aerospace industry, in companies such as Blue Origin, Northrop Grumman, Maxar, Raytheon, NASA, Boeing, and many more to come

GOALS

- Launch a liquid bipropellant rocket to 30,000 feet
- Break the altitude record for collegiate liquid rocketry
- Successfully fire the most powerful methalox rocket engine developed by undergraduate students

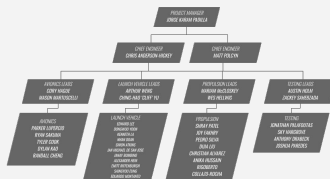
OBJECTIVES

- Manufacture and test a modular test stand for liquid bipropellant rocket engines up to 10,000 lbf
- Reliably manufacture and assemble multiple PTE engines for multiple test fires and launch
- Design lightweight launch vehicle structure to launch a 2.2 lb payload to 30,000 ft and recover safely
- Develop a reliable test stand data acquisition and control system
- Develop launch vehicle avionics system for valve actuation, flight data acquisition, and telemetry

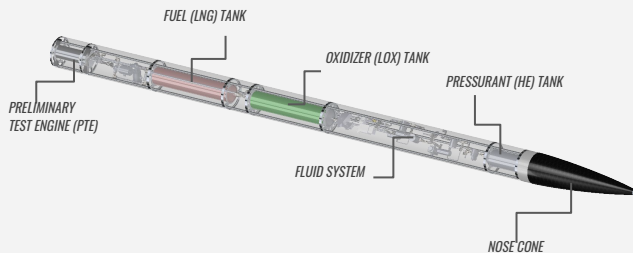
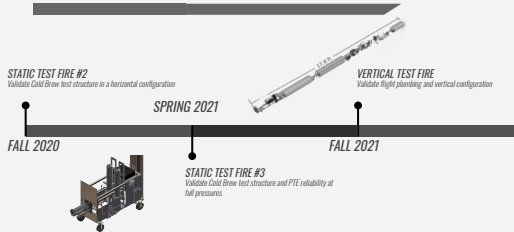


Preliminary Test Engine (PTE)

TEAM ORGANIZATION



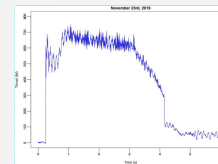
PROJECT TIMELINE



Our Preliminary Test Rocket (PTR) is designed to break the current altitude record of 13,000 ft for university-built liquid rockets. Propelled by our PTE engine, its lightweight aluminum/carbon fiber body will soar to an estimated 30,000 feet and be safely recovered on the ground using a two-stage parachute system. The launch of PTR is currently scheduled to occur in 2022.

PROGRESS

- Conducted UCIRP's first static test fire (STF1) producing an average of 750 lbf of thrust for 3 seconds
 - Redesigned and assembled an improved test stand to improve fluid system design and test operations
 - Redesigned test stand electronics to include new avionics bay, improved wiring, intuitive LabView VI, and manual control box
 - Manufactured and purchased components to assemble multiple PTE engine for next two test fires (STF#3 and VTF)
 - Finalized critical design of launch vehicle structures, vehicle propulsion system, and recovery system
 - Finalized design of ground support equipment and infrastructure associated with vertical test fire and launch



Static Test Fire of PTE

PRELIMINARY TEST ROCKET COST

