



 **SOUNDING ROCKET LABORATORY**

Fall 2023 Sponsor Packet

Obsidian Vehicle launches to 33,000 ft
and Mach 2.2

The Team

Mission

To propel students to the top of their field of study through hands-on experience and preparing them for the workforce while safely pushing the limits of amateur rocketry.



Above: Members of SRL organized on November 2, 2019 before a launch of our custom 8.5" diameter Spaceshot manufacturing pathfinder: Diamondback



Experience

Our diverse team of nearly 100 active members are students representing nearly every department at CU. SRL members bring with them hands-on experience developed during industry internships and research opportunities; their defining characteristics are an intense eagerness to share knowledge and ideas, and the tenacity to follow through as a team.

Many members are already making significant contributions to the Aerospace field, with many acquiring internships and/or full time positions at high-impact aerospace companies, such as:



...and many more!

Sponsor Benefits

Exposure

Publicizing your company and its products to thousands of viewers across many different media platforms!



Press Coverage

Presenting your company along with the CU SRL team for industry and press coverage!



Recruitment

Connecting with the next generation's best college students with our networking events and resume books!

Tax Benefits

The CU SRL team has an IRS 501(c)(3) tax exempt status and all donations to the team are tax deductible!

How to Support

A sponsorship with CU Sounding Rocket Laboratory will provide your company or organization with a tangible connection to an incredibly bright, motivated, and driven subset of the student population at a top engineering university. Additionally, it will demonstrate your commitment to engineering education, exploration, and technological innovation.

Our rockets are held to high standards of cleanliness and engineering quality, and we effectively use the opportunities for publicity provided by competitive rocketry events, media interviews, and online video progress and promotional videos. With your support, we can continue to safely build talent in every field of study and push the limits of student-led high-powered rocketry.



Monetary Donations

For team operations, manufacturing, and rocket and engine development

Material Donations and Discounts

To incorporate into test equipment and rocket designs, such as avionics, propellant, samples, metal, carbon fiber, plastic stock, or software

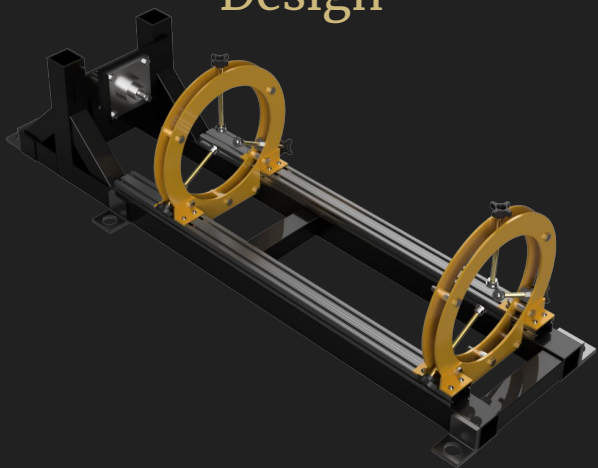


Sponsor Levels

	Platinum \$15,000+	Gold \$1000+	Silver \$500+	Bronze \$200+	Donor <\$200
Name - present on website sponsors page	✓	✓	✓	✓	✓
Logo - Website, Banners, Transport cases	✓	✓	✓	✓	
Name/Logo - inside Rocket	✓	✓	✓		
Name/Logo - Rocket Ext., Team Apparel	✓	✓	✓		
Logo - prominent on Website	✓	✓	✓		
Logo - Spectator Facing Sides of rocket	✓	✓			
Logo - End of all SRL created videos/media	✓	✓			
Team Resume Book	✓	✓			
Promotion during Public Appearances	✓	✓			
Promotion during Interviews from external sources	✓				
Logo - Full screen banner at the end of all SRL created media	✓				
Logo - Dominant on rocket, coloring choice	✓				

What We Do

Design



Above: Cad rendering of our new horizontal test stand.

Build



Above: Custom wound carbon fiber combustion chamber and 3D printed Inconel injector assembly.

Test



Above: O-Class Composite Motor Static Fire.

Fly



Above: SRL's Obsidian rocket, flown at Mach 2.2 to an altitude of 33,169 feet and recovered on April 2, 2022.

Mamba

(Solid Motor)

Mamba is our 6" diameter flight vehicle meant to be a stepping stone between our 4" "Obsidian" flight vehicle and our 10" "Spaceshot" flight vehicle.

Mamba will serve as a proving ground and testbed for numerous in-house technologies including but not limited to:

- Custom composite propellant
- Composite-cased motors
- Fully Custom Avionics
- Airframe and motor TPS solutions

Designed and built by the following sub-teams:

- Solid Propulsion
- Avionics
- Composites Manufacturing
- Vehicle Design

Mamba's flight profile will bring it to at least 100k feet and past Mach 3.6 which will allow us to test the functionality and survivability of our equipment before our next flight vehicle which will be going nearly 400k feet and Mach 5+.



Boomslang

(Liquid Bi-propellant)

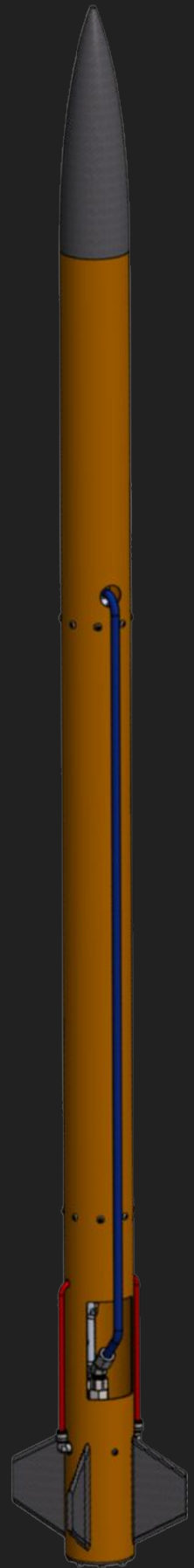
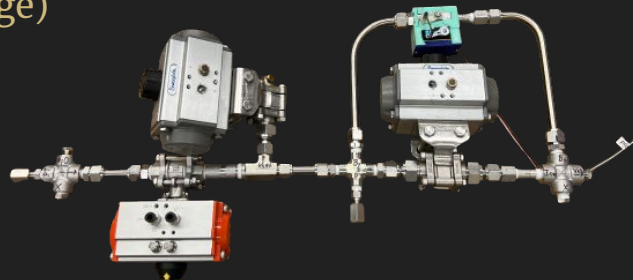
Boomslang is an ethanol-fueled, nitrous oxide oxidized rocket that will launch 10,000+ feet. This project will provide insight into the efficiency of the fill system, thrust characterization, and much more!

Major components of this rocket, including the pintle injector, fuel/oxidizer tank, test stand, and airframe, are manufactured entirely by students in these sub-teams:

- Mission Control/Test Stand
- Propulsion
- Fluid System

Some of the major goals of the Boomslang rocket are:

1. Complete multiple static fires before and after launch to fully characterize the thrust performance of the system.
2. Develop higher standards of safety with respect to high-pressure systems, oxidizer transportation, and fill/vent procedures.
3. Go as high as possible! (as per the dollar-per-foot challenge)



Future Major Projects

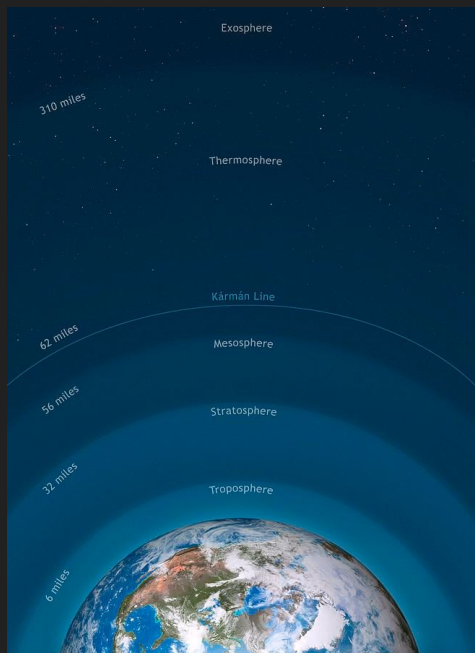
(Late 2023)

SpaceShot

Launching Spring 2024

Spaceshot will be our rocket designed to break not only the Kármán line (100 km), but to break the collegiate rocketry altitude record (~100 km) by at least 10 km.

The goal of SRL since its inception has been to bring payloads on a suborbital flight out of the atmosphere at a cheap price for university researchers and student organizations. There has only been one team to break the Kármán line but we hope to be right behind them and be the first team to break the Kármán line with 100% certainty.



The CPLC challenge will be the liquid team's most ambitious project yet. There are five main milestones to work towards including:

1. TVC hotfire - 500 lbf engine thrust and 360 degree gimbaling
2. Throttleable Engine Hotfire - 500 lbf nominal thrust with a range of 10-100%
3. 10s Tethered Hover flight
4. The Bess Touchdown Award - successful landing from minimum 10m height
5. 50m hop with a successful landing

*Each of which awards the first 3 teams to complete the challenge minimum cash prize of \$15K.

Participating in this challenge will expand the limits of SRL and require extensive planning, design, and safety precautions.

Socials

Website:

CUSRL.com

Youtube:

<https://www.youtube.com/channel/UCeEgO6arKJQcsKA-ScZu2ZQ/videos>

Instagram:

<https://www.instagram.com/soundingrocketlab/?hl=en>



Above: Composite Motor Dev. Exhaust Plume

Contacts

For any additional inquiries or information, feel free to reach out at your convenience to any of the following contacts:

Blake Hannum - Business Lead

blake.hannum@colorado.edu

720-626-2718

Mike Sherman - Team Captain

michael.sherman@colorado.edu

518-878-2128

Ben Chapel - Team Captain

benjamin.chapel@colorado.edu

303-478-6024

Nico Madrid - Treasurer

nico.madrid@colorado.edu

203-604-3521

Team Email

cu.usli@colorado.edu

