



Brief table of Contents

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2. Interesting missions Polysat is working on
3. How my research here relates to Polysat

What is Polysat

- Polysat is an on campus research lab on Cal Poly campus.
- Students must apply to get in.
- Polysat consists of about 60 students

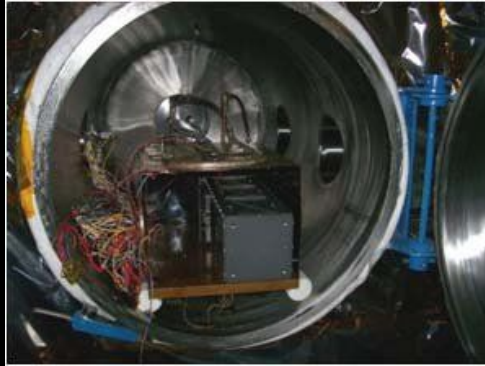


Advisors, you probably wouldn't know them...

What does polysat do



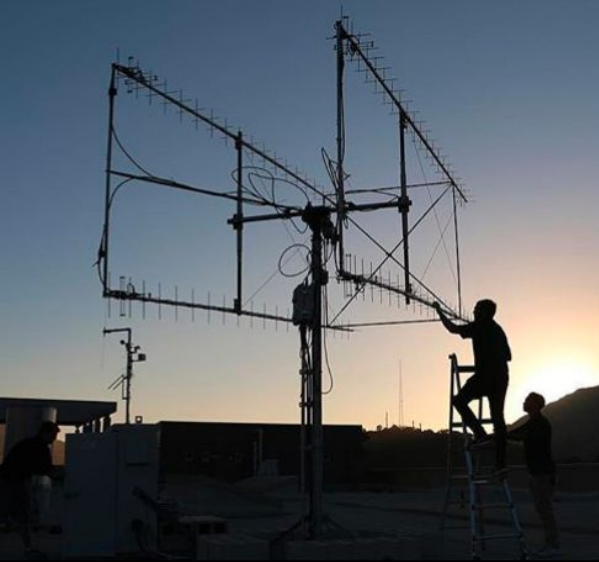
Satellites



Testing



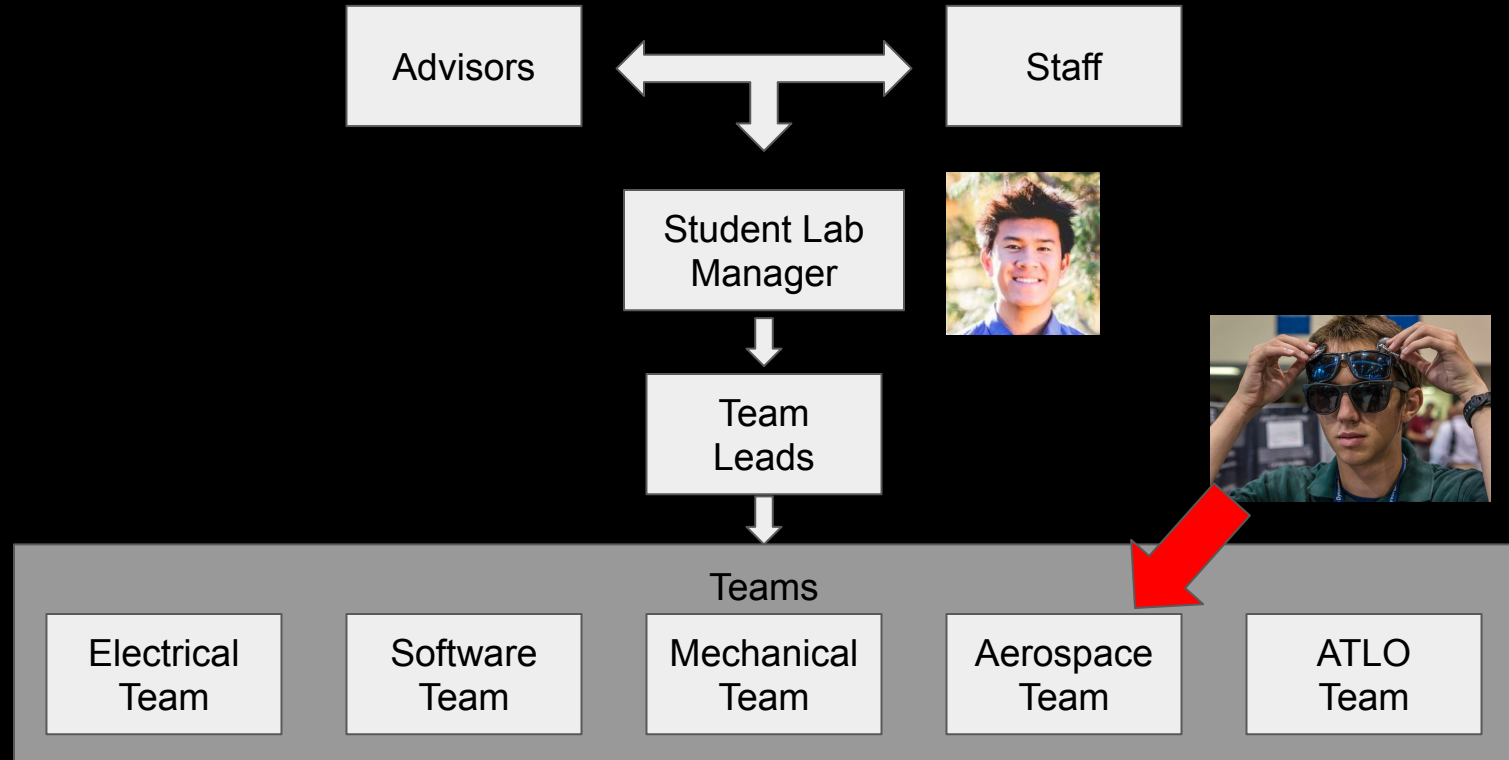
PPOD Deployers



Facilities



How is polysat organized



Current Projects

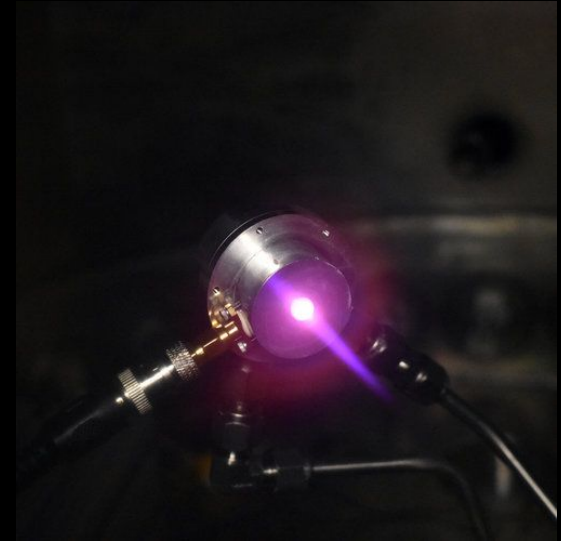
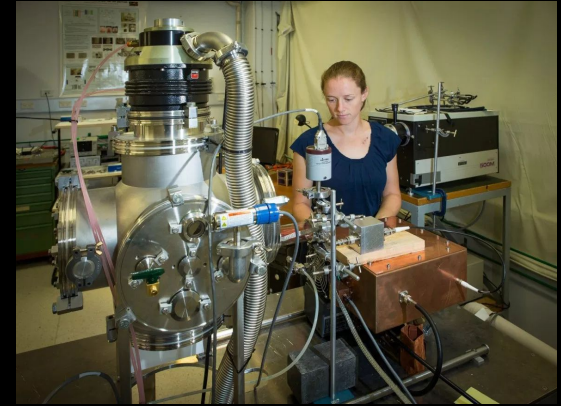
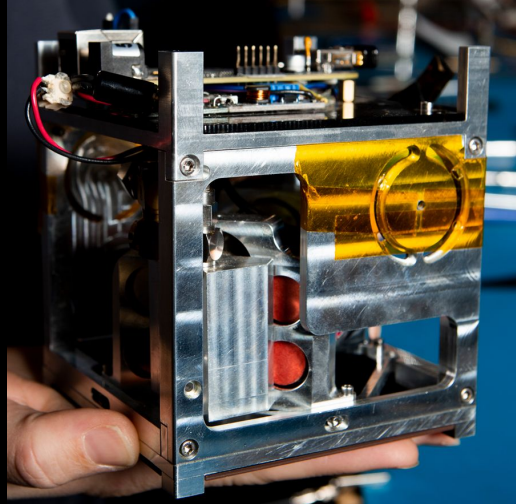
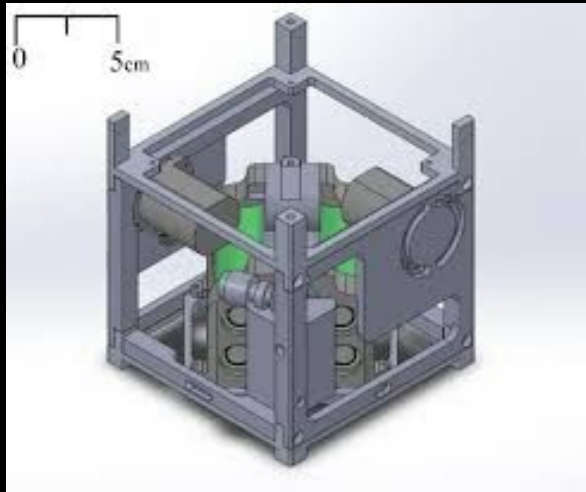
Lightsail 2

- Tested at Cal Poly
- Operations conducted through Polysat
- Using some Polysat hardware
- Some software written by Dr. Bellardo



Pocket Rocket

- Radiothermal Thruster
- ISP ~ 60s
- Argon fuel
- Led by Dr. Amelia Greig



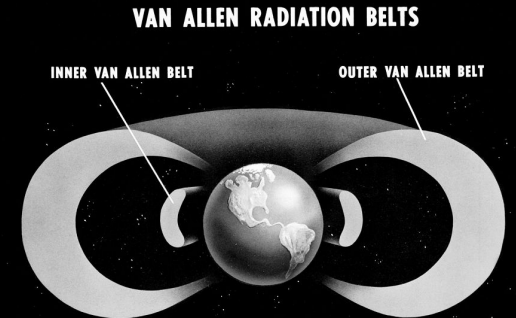
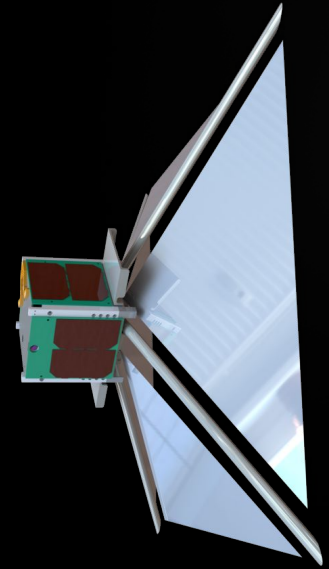
ISX (Ionospheric Explorer)

- Listened to Television signals and measures their distortion
- Dead on arrival



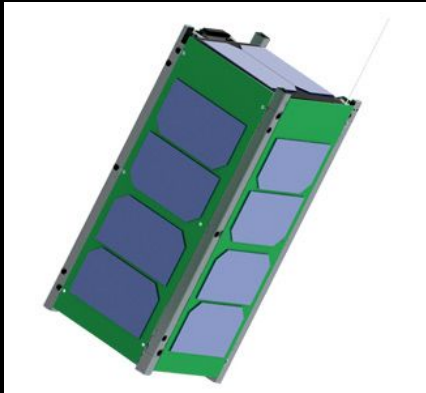
ADE (Atmospheric Drag Experiment)

- Testing an experimental sail to deorbit spacecraft faster
- Bus designed and built by Polysat, dragsail by Purdue.
- Designed for Geosynchronous orbit
- Travels through Van-Allen belts
- 2-3 kg due to radiation shielding



LEO (Launch Environment Explorer)

- Outreach mission with a highschool in California.
- Measured vibrations during launch and communicated with a 1U over wifi during launch.



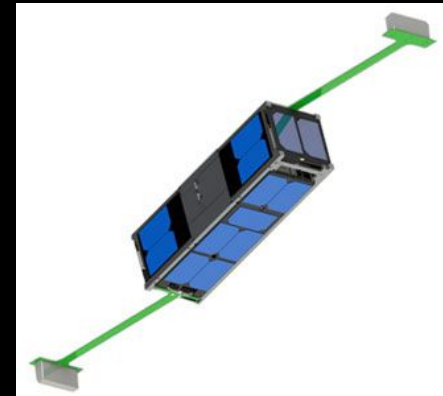
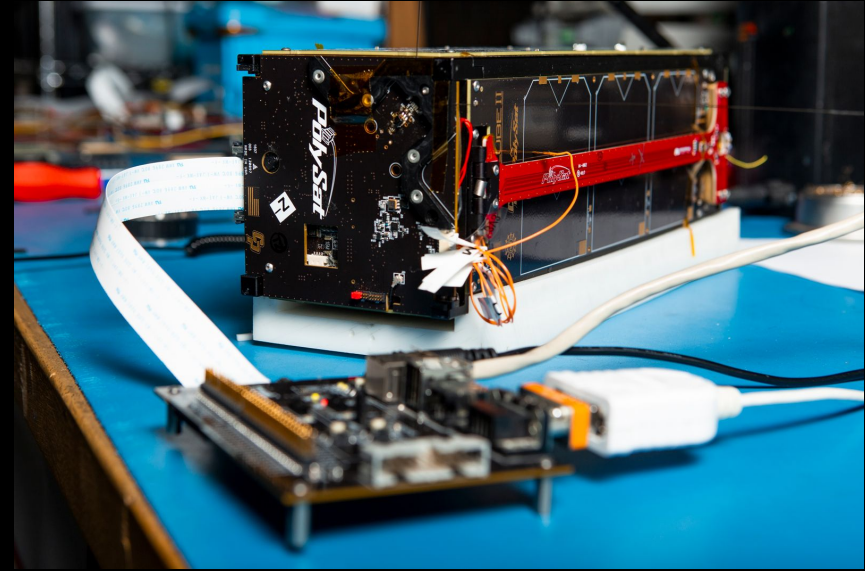
Exocube II

Contains a mass-spectrometer from NASA Goddard

Will measure ion concentrations in the exosphere

Attitude controlled by:

1. Gravity booms
2. 3 magnetorquers
3. 1 reaction wheel



Exocube I failure

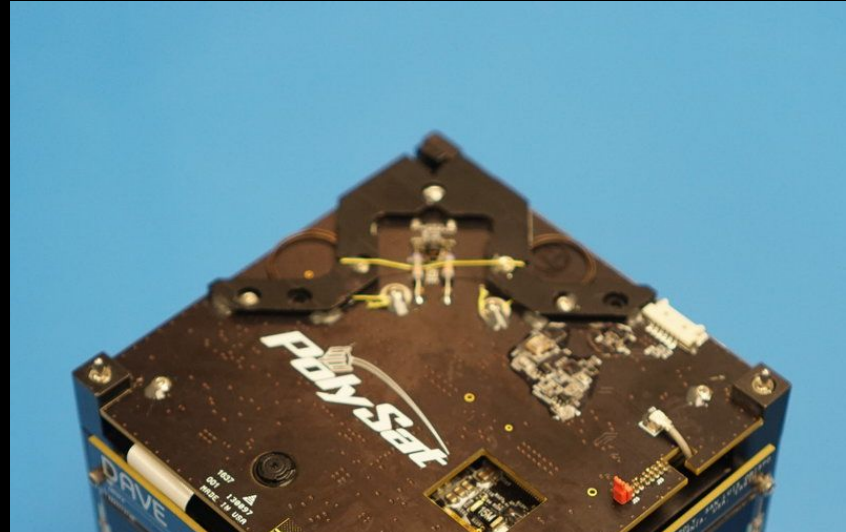
- Antenna deployment failure
 - Could still communicate, but signal was faint
- Possible cause of ISX failure
- Mission was still successful



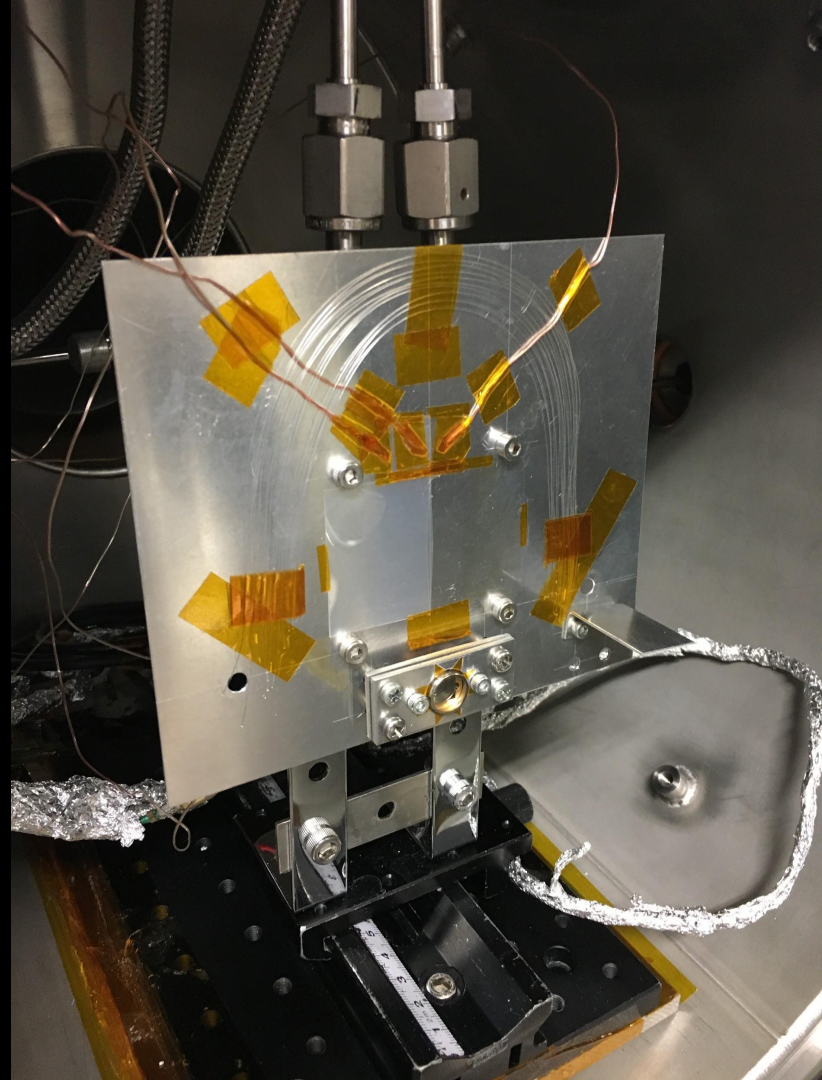
Thank you Stanford!

My Research (Degradation of burn wires)

- Investigating failsafe deployment mechanism
- Measuring the degradation of various materials in atomic oxygen and ultraviolet radiation environments

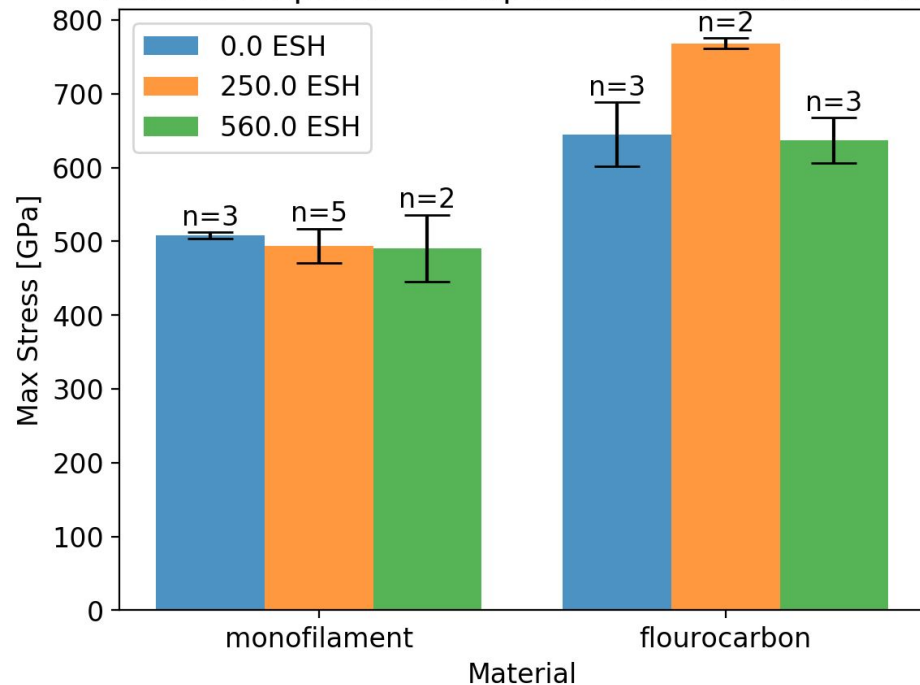


Current Polysat deployment mechanism



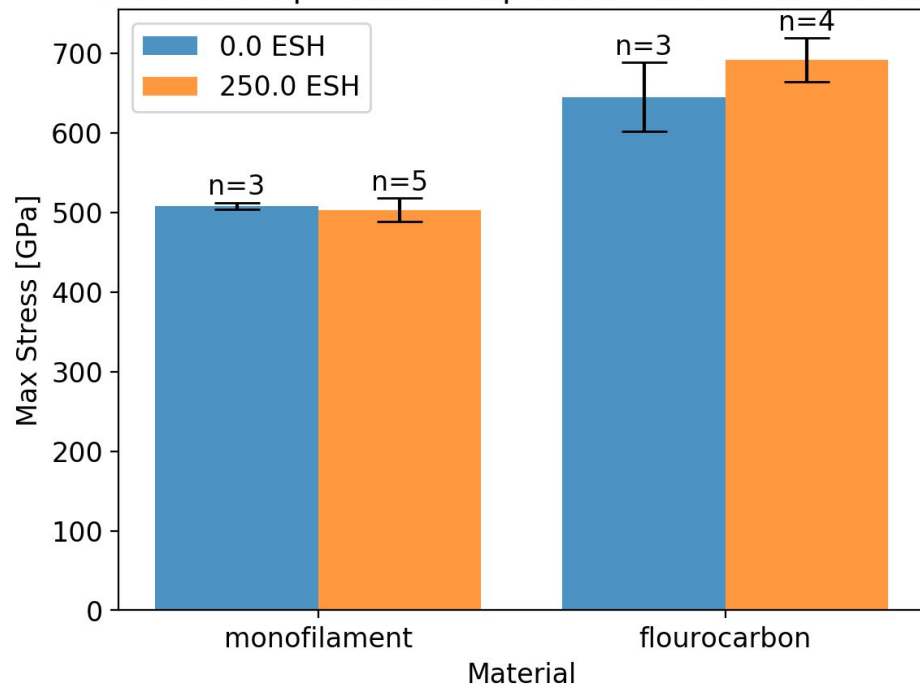
My results so far

Material Properties vs Exposure Time at 200-400nm



200-400 nm

Material Properties vs Exposure Time at 100-200nm



100-200 nm

Thank you!