

Background

- Higher power densities up to 1400 W/cm^2 are being produced by new electronics
- Air Force Research Laboratory is actively researching cooling solutions to address the issue

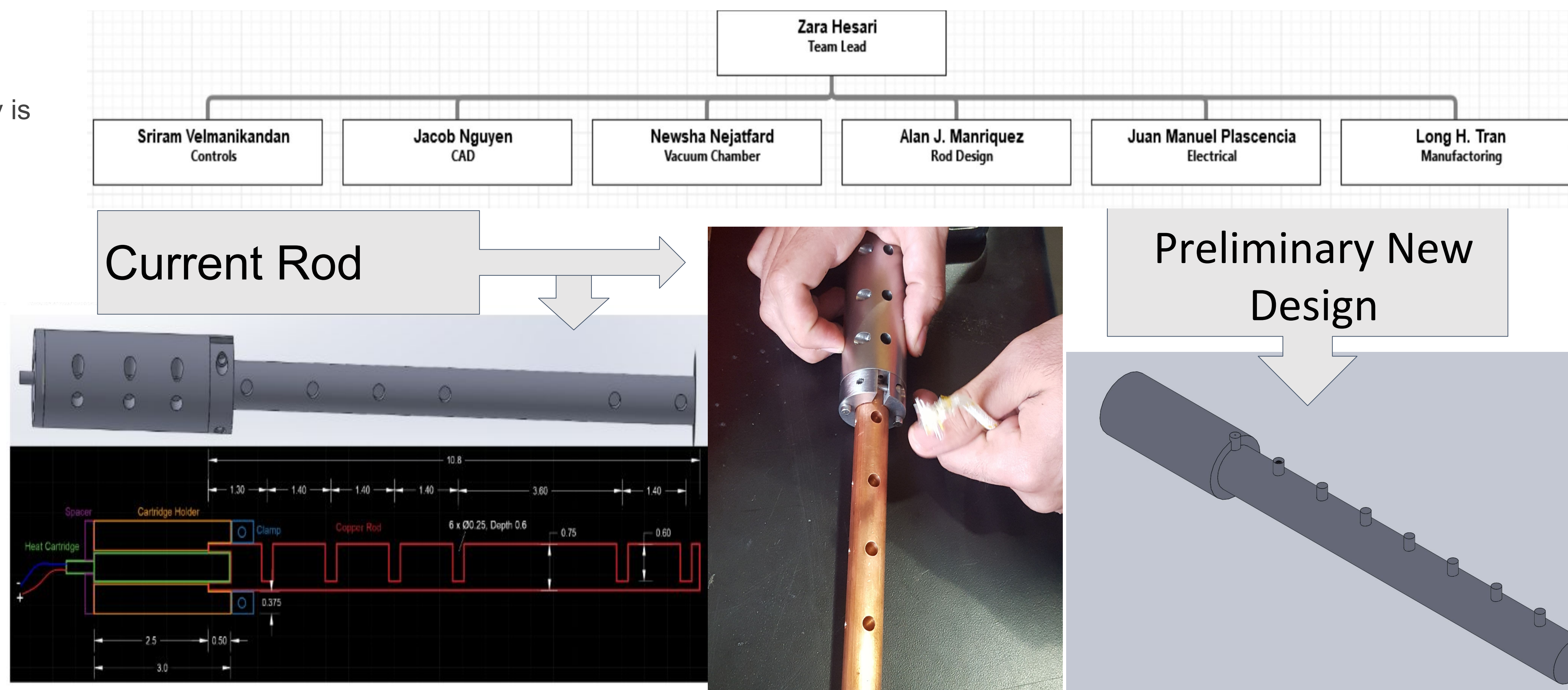
Goal & Objective

- Goal:** Achieve a steady state energy dissipation
- Objective 1:** Acquire accurate temperature data while running tests with water cooling.
- Objective 2:** Design a new rod
- Objective 3:** Add vortex tube w/ nitrogen gas to increase energy dissipation

Budget

We are funded by UROP and Samueli School of Engineering at UCI.

Faculty Advisor: Dr. Rafique, Dr. LaRue
The Team:



Vacuum insulated chamber that can handle cryogenic and high temperatures (400C+) on a structure made using calcium silicate.

Timeline

Fall Quarter

- Adjust current rod design
- Order new heat cartridge

Winter Quarter

- Manufacture new rod design
- Look for new cooling solutions (vortex tube)

Spring Quarter

- Develop a "recycling system" for the LN2
- Continue tests and adjust design

Design Goal: Attach thermocouples at surface of rod to minimize temperature gradient change

Current ideas:

- A: Push thermocouple down a tight hole
- B: Use threads and screw to hold it in place.

