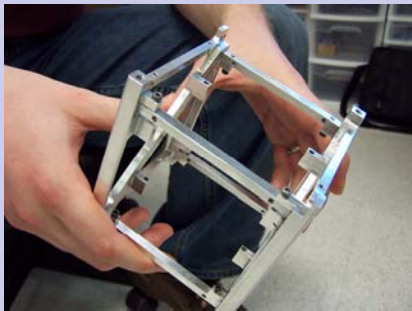


## ***Mission Statement***

*The goal of this project is to give the engineering students at the University of Louisiana at Lafayette the opportunity to research, design, develop, and maintain an earth orbiting satellite.*

*The students working on this project hope to accomplish a greater understanding of satellite technology that goes beyond the classroom. We also hope to show that the University of Louisiana at Lafayette has many great opportunities in the College of Engineering.*

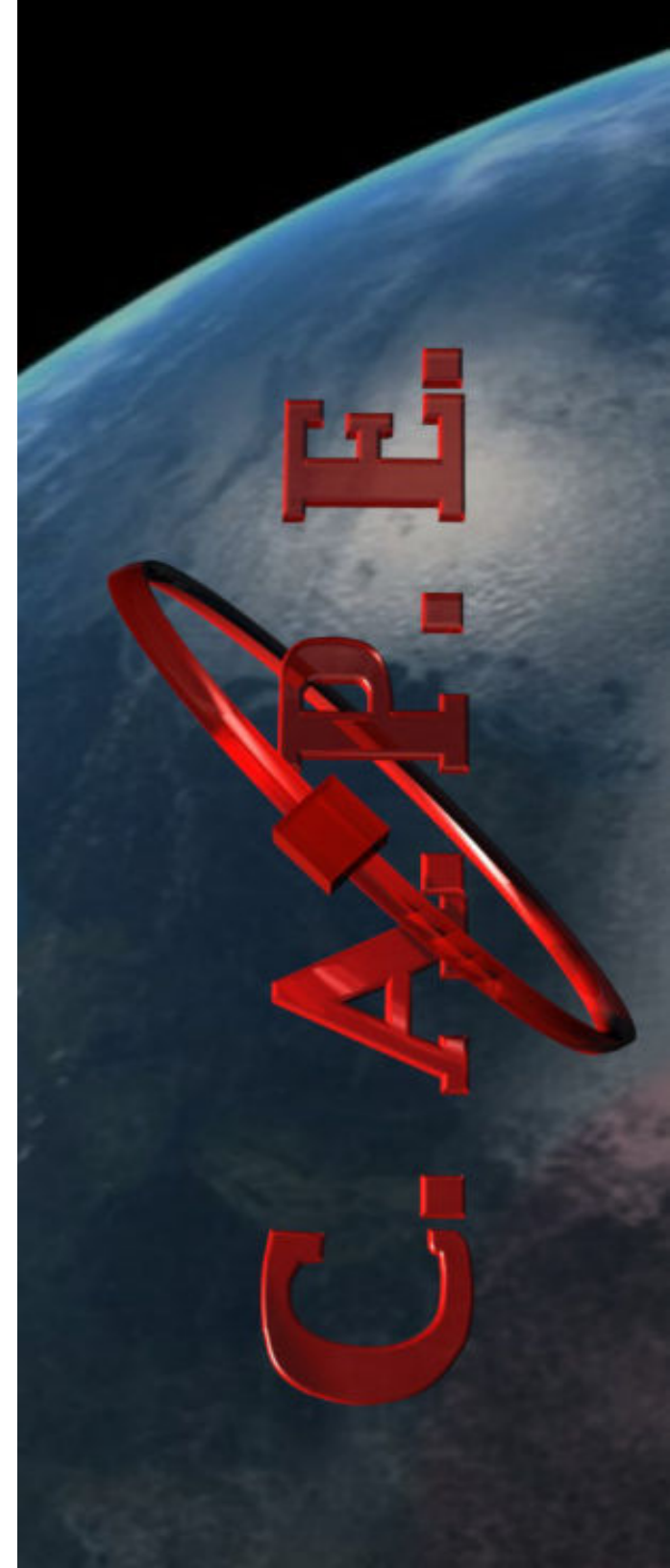


Structure Prototype from Digital Machining Systems



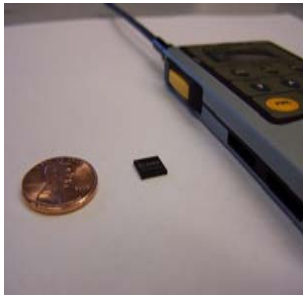
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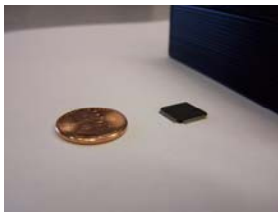
## A Look Inside CAPE I

### Communications Subsystem



CC1020 between a penny and an Alinco DJ-C5 handheld transceiver

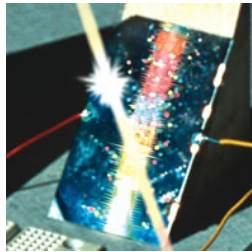
The communications system will consist of a TNC, Transceiver, RF Amplifier and Antenna's. The CAPE team is designing all of the pieces of the communications subsystem. A PIC Microcontroller will act as the TNC, which will create and decode the AX.25 protocol which contains the team's data. The Transceiver that will be used is the CC1020, which was chosen because of its extremely small size, low power, and low cost. The CC1020 will give the CAPE team the ability to communicate with the satellite.



PIC Microcontroller between a penny and a PacComm Pico-Packet TNC.

### Power

The power team will be responsible for power management and power distribution. Triple Junction Solar Cell's will be used to generate power. The power generated will then be stored in lithium-ion batteries. The lithium ion



batteries will be reserved for usage during the eclipse periods of the satellite orbit. The batteries will also be used when subsystems require more power than the solar cell's can provide. A power management system

will be implemented to control the amount of power provided to each individual subsystem.

### Payload

The first section of our payload will be a series of diagnostic tests which include checking temperature of different sides of the satellite as well as temperature of certain devices. We will monitor other things such as battery power consumption and solar power collection. Outside of the standard statistical information we will try to embark on some other ambitious goals.



Temperature sensors from our CanSat I prototype in action

### Mission

As everyone in knows, our coast lines in the Gulf of Mexico are becoming eroded by saltwater intrusion. Our wetlands suffer the most, and our state prides itself on wildlife in fresh water conditions. In conjunction with a professor in the Electrical Engineering department at ULL, we will be developing a data exchange system on the satellite which will interface several terrestrial transmission towers. These 'floating' towers will pick up information from hundreds of sensors in the gulf water and transmit the data as the satellite passes over. The entire system will be setup and tested before our launch.

### Sponsors



# C. A. P. E.

Cajun Advanced Picosatellite Experiment

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