UCI CUBESAT

UCI Samueli School of Engineering

CONTACT
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GOALS: The goal of UCI CubeSat is to design, test, integrate, and launch a modular microsatellite into low-Earth orbit in conjunction with Professor Rafique, Professor Kassas, and the ASPIN lab at UCI to test multiple payloads in orbit.

The team hopes to be the first student launch at UCI, creating a standard for future student launches and orbital research at UCI.

OBJECTIVES:
- Model the orbit and orbital conditions of the CubeSat throughout the mission lifetime
- Integrate components of various subsystems to collect data, manage power, and communicate with the groundstation
- Build and test a functional receiving groundstation
- Test the subsystems and CubeSat among operational and launch conditions
- Integrate and successfully launch the satellite
- Create thorough documentation and a foundation for future UCI orbital projects

SUBSYSTEMS:
Power: Includes the external solar panels, battery management system, and the battery itself, responsible for power collection and distribution throughout the satellite

Communications: Utilizing a PQ9ISH transceiver provided by the Libre Space Foundation, responsible for consolidating data throughout the satellite and transmitting it to the groundstation

Avionics: Utilizing a magnetorquer and reaction wheels, responsible for attitude control of the satellite and orbital maneuvers

Thermal: Responsible for thermal management of other subsystems and of the payload

PAYLOADS:
VARIABLE EMISSIVITY SAMPLE:
Pictured to the right is the variable emissivity sample provided by Professor Rafique. The sample changes color and emissivity in response to varying voltages, and our job is to test its performance in response to direct solar radiation. Similar materials are hoped to be used as a cheap method of thermal management on future spacecraft.

SIGNAL OF OPPORTUNITY TRANSCEIVER:
In collaboration with the ASPIN lab at UCI, the satellite will carry an additional transceiver meant to function as a transmitter of a "signal of opportunity", helpful in researching novel navigation methods in the absence of or in place of a traditional GPS signal.

TEAM MEMBERS:
Faculty Advisors:
Professor Zak Kassas
Professor Khalid Rafique

Graduate Manager: Ulices Santa Cruz Leal
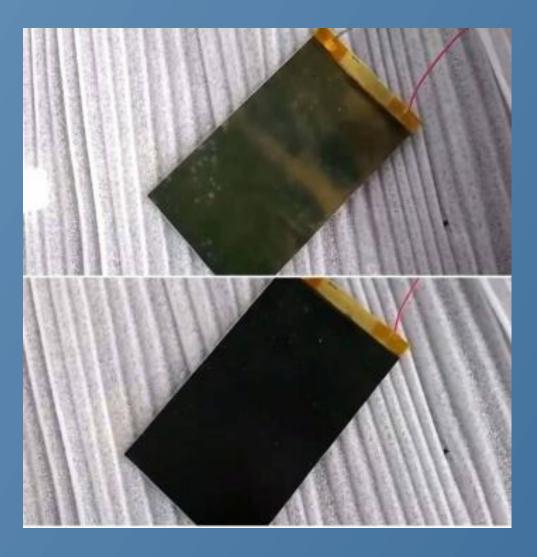
Project Lead / Systems Engineering: Taekyoo Won

Power Systems / Payload: Fadi Samaan

Attitude and Orbit Control Systems / Avionics: Sergio Sandoval, Armen Ter Avetisyan

Thermal / Astrodynamics: Anthony Drabeck