UCI Satellite
University of California Irvine CubeSat Team

2010 CubeSat Workshop
The UCI Satellite Program
Spirit & Innovation
Learning Curve
UCI Satellite Projects

**UCISAT-1**
- Main mission objective: Capture images of the Earth from LEO and transmit them back to the K6UCI ground station on campus.
- To be completed:
  - ITAR/Export Control licensing
  - Subsystem level testing
  - Thermal Vacuum Test
  - Vibration Test
  - Final integration

**UCISAT-2**
- Main mission objective: To determine whether natural sunlight and high energy irradiation can break down pollutant compounds in water to recycle water for extended space exploration.
UCISAT-2 In-flight Fluorometer

*Theoretical Process*

- Solar Light Source
- Oscillating Input Signal
- LED (Controlled Light Source)
- Excitation
- Organic Sample
- Emission
- Photodiode
- Transimpedance Amplifier
- ADC
- to CPU...
UCISAT-2 Payload

• Background:
  – Partnering with Dr. Bill Cooper of Civil and Environmental Engineering at UCI
  – Use solar radiation to “fluoresce” model pollutant compounds in water
  – Measurement of fluorescence intensity will be used to determine the breakdown of the organic compounds over time

• Implications:
  – Purifying contaminated water with sunlight and radiation take advantage of the existing space environment
  – Alleviates the need to bring expensive equipment to space for the same purpose
  – Offers a significantly cheaper alternative to water purification for extended space missions (back to the Moon, Mars)

• Next Steps:
  – Fluorescence/radiation testing with sample compounds
  – Design circuitry for on board fluorometer
Sample Compound:
Orbifloxacin Fluorescence vs. Excitation wavelengths
Thank You