HASP 2016 Student Payload Monthly Report

Payload Flight Number: 20016-09	**Institution:** University of Central Florida
Payload Title: Hazardous Gases for Harsh Environments LED Sensor	
Student Leader: Michael Villar (Graduate Student) Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 mvillar@knights.ucf.edu Cell: (561) 512-3953	**Faculty Advisor:** Dr. Subith Vasu Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 subith@ucf.edu Office: (407) 823-3468
Current Team Members: Justin Urso (Graduate Student) Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 Justin.urso13@knights.ucf.edu Cell: (352) 817-9212 **Past Team Members:** Kyle Thurmond (Graduate Student) Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 kthurmond@knights.ucf.edu Cell: (407) 617-0475	Akshita Parupalli (Undergraduate Student) Mechanical and Aerospace Engineering 4000 Central Florida Blvd Orlando, Florida, 32816 Akshita.parupalli@knights.ucf.edu Cell: (321) 696-9969
Report Month: September	**Report Date:** 9/30/2016

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Team Member Activities:

Michael Villar has been working on post processing the flight data for the system. This includes writing a Matlab script to parse all of the 697 collected measurements and correlate the peak intensities of the captured LED signals with the environmental data (Pressure/Temp) throughout the entire flight. The sensor modulates its three LEDs at different wavelengths so that a FFT can be done to the stored signal to determine the peak intensity of each LED. Temperature and Pressure effects the intensity of this signal and when the Temp and Pressure data from the flight is added into the data it will output the concentration measurements of CO and CO2 in our gas cell (Which should read a constant measurement).

Akshita Parupalli conducted damage analysis on the system. On landing impact there were a number of parts damaged so a detailed list of all damaged parts has been put together.

System Updates:
- UCF's payload was successfully returned Sep. 14th and a breakdown of the system was completed to access the onboard flight data and to analyze any broken components.
- Preliminary analysis of data shows successful operation of the payloads sensor throughout the entire flight.
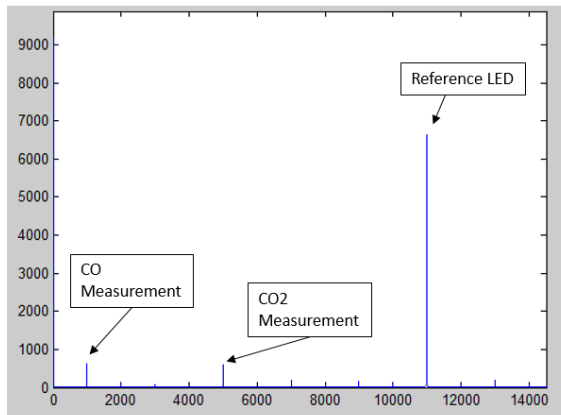

Figure 1: Prelim Data Analysis

Figure 2: Payload Returned to UCF