This experiment was a follow-up of the 2017 Fall prototype in which Edge of Space, again, launched a high altitude balloon payload. The balloon payload carried a custom built and engineered microscope, which was designed to view objects in the range of 0.45mm, which is 450 microns, this microscope can observe tardigrades while they consumed algae as they ascended towards the stratosphere. The stratosphere is roughly 30km or 100,000 ft. above sea level, this would allow us to view how the tardigrades behaved in flight and to prove that the Tardiscope™ microscope can indeed work in many different conditions that would never exist inside of a lab environment.

Abstract

Inspirations

- UCLA Prototype Microscope:
  - Lensless
  - 46 grams
  - Requires USB connectivity

- Mitutoyo Laboratory Microscope:
  - 2000x Magnification
  - Base cost: $25,000+
  - 75 kilograms

- Dino-Lite:
  - Base Cost: $900+
  - Requires USB connectivity
  - 10x - 140x Magnification

Looking Forward

Automation and Digitization:

- Remote Sampling in Hazardous Environments
- Determine/Monitor Environmental Factors at Remote Locations

Automated Focus:

- Aids Implementations of Drone Technologies
- No Human Intervention
- Utilization of Adjustment Mechanism May Be Possible

Compact Digital Screen:

- Liquid Crystal Display
- Bluetooth or WiFi Enabled Device

The Space Grant Project

Colorado Space Grant Consortium:

- Balloon Launch by Edge of Space Sciences
- Funded by NASA and Private Industries
- 17 Colleges and Universities throughout Colorado Participate.
- Mar. 7 launch Flight Path

Materials:

- 3-D Printed Parts Made From PLA (Poly Lactic Acid)
- GoPro Hero 4 Session Action Camera
- 3.7VDC 180 mAh LIPO Battery (Light Source)
- 5VDC 2200mAh LIION Battery (External Battery for camera System)
- Salvaged Microscope Parts
- Styrofoam Outer Shell
- Soft Plastic Guide Tube (For Flight String)
- Micro SD Card

Rigid, Rugged, Modular Design