Unstandard CubeSat/PocketQube/TubeSat Deployers

Prof. Bob Twiggs
Kennedy Haught
Booke Shellabarger

Morehead State University
Morehead, Kentucky

- Morehead State University
- Deployers
- Small Space Experiments
Anechoic Chamber
RF Test Antenna at end
Deployers

Deployers – what we have now?
Standard P-POD for 3U

What is the trend in deployers?
Bigger - P-POD – 6U, 12U, 24U
Smaller – PocketQube

Retaining scheme
Four corner rails – original standard
Base plate – Planetary Systems Corp
- PocketQube
Deployers

What needs improving?

• Positive clamping of CubeSat in deployer – not rattling

• More peripheral room for solar panels, antennas, deployables, etc.

• More flexibility in deployment of peripherals – drag on inside

• Better access to CubeSat when in deployer

• Deployment of non standard small satellites
Deployers

What’s new?

PocketQube

• MR-FOD – used internally in the UniSat microsatellites
Deployers

**TubeSat**

- **TU-POD** - Advanced manufacturing with Windform – 3D printed
  - 40% weight of aluminum
  - Flexible design
  - Fast turn around – use CRP North Carolina facilities
Launched on ISS
PocketQube Deployers

Using P-POD

113 mm

8.5 x 8.5 mm rail

3.0 mm wall

100 mm

100 mm
Deployers

What’s new?

Teton Deployer - CubeSats

- Advanced manufacturing with Windform – 3D printed
  - 40% weight of aluminum
  - Flexible design
  - Fast turn around – use CRP North Carolina facilities
New Topic

Change of topic
New Topic

• What should be the focus of space activities?

• What about expanding the focus of the CubeSat community?

• Now Small Space Experiments
  – CubeSats – imaging, comm, space weather, lunar, Mars and beyond

• How about more utilization of space environment?
  – Microgravity
  – Vacuum
  – Radiation
New Topic

Questions personal for you?

Heart problems?

Alzheimer’s disease?

Cancer?

Diabetes?
New Topic

Question?

Is your CubeSat work doing anything for?

Heart problems?

Alzheimer’s disease?

Cancer?

Diabetes?
Astrobiology?

Treatment of heart disease with stem cells.
Astrobiology?

Scientists coax stem cells to form 3D ‘mini-lungs’

University of Michigan
What may be possible?

The key to curing Alzheimer's disease may lie in outer space.

Aboard the International Space Station, scientists discovered that the protein fibers in the brain responsible for Alzheimer's do not collapse in low gravity.

Source: NASA

Learn more at curiosity.com

Curiosity

Is subtracting gravity the answer to solving Alzheimer's?:
Questions to all of us.
• Could we pay more attention to space medicine research?

• Who could benefit the most from our space work?
Thanks
How about a goal to have at least 25% of CubeSats doing space medicine research?