

Integration of a fiber optical sensor network for shape monitoring inside a deplorably or inflatable heat shield aboard a cubesat



We are looking for two motivated EA/ICT master students.

Project Description :

The Aether Student CubeSat team brings together young Belgian engineers who are passionate about space technology. We are designing a CubeSat: a nano-satellite small enough to hold in your hand. In the past decade, the CubeSat standard has enabled countless new innovations in the space industry, and we are determined to uphold this tradition!

Aether is focusing on the area of re-entry: creating the technology that will allow future CubeSats to safely re-enter the atmosphere and land on Earth after carrying out their experiments in orbit. This will allow scientists to analyze samples and get even more results out of their experiments, and all this with the affordability and accessibility that come with the CubeSat platform!

Thesis description :

During re-entry, the cubesat needs protection for the vital elements aboard. In order to do this, a dedicated heat shield is necessary. This will deploy during the re-entry phase. The used setup of this heat shield is under study. One thing is obvious: the shape of the heat shield has to protect the cubesat in the most optimal way. To achieve this goal, this thesis aims at the investigation and monitoring of the shape of the heat shield by using Fiber Bragg Gratings. The distribution of a dedicated optical sensor network, using these elements, will enable the monitoring of the shape of the heat shield in a detailed way. The latter is necessary to create an insight in the way the heat shield can create the most optimal re-entry trajectory.

Thesis objective :

The goal is to design a monitoring system, based on Fiber Bragg Gratings, able to model and visualize the shape of a heat shield during a cubesat re-entry. The design will include a study of the distribution of the fibres throughout the heat shield material, as well as incorporating an optical readout device.

Profile :

- Fiber optics
- Control systems
- Data readout and visualization

What do you gain ?

- A unique engineering experience within an exciting space mission.
- Create added value for your CV and the team.
- A team of students willing to help in any way possible.
- Be part of the team that will revolutionize the CubeSat platform.

If you are interested? Please contact us at recruitment@aetherspace.be .

Andreas Vesaliusstraat 13, 3000 Leuven, Belgium

www.aetherspace.be