

GaAs Optical Modulators with large Temperature Range for Satellite Communications

Company: aXenic Ltd.

Location:

aXenic
NetPark Plexus
Thomas Wright Way
Sedgefield
TS21 3FD

Company Description:

aXenic specialize in the design, manufacture and testing of high-speed photonic modulators used in optical communication systems and fabricated in compound semiconductors such as Gallium Arsenide. Since 2015 aXenic have developed new products specifically for application in satellite communications. Our aim is to become the leading supplier of optical modulators for space photonic systems.

Project Description:

Several Low Earth Orbit (LEO) satellite constellations for the delivery of broadband services have been announced, including: Oneweb, Telesat LEO and Starlink. Laser communication will be required in many of these applications to provide Gb/s intersatellite links and high capacity upload. Our high-performance GaAs optical modulators, manufactured in commercial foundries, are highly reliable in the harsh environment of space and must operate over a demanding temperature range.

In this project the behaviour over temperature will be explored by both theoretical calculations using models and by practical measurements. The goal will be to find the limits of the already wide operating temperature range and identify opportunities to further extend and improve the performance.

In space applications our optical communications device must operate reliably over a wide range of temperatures, typically from -10C or lower to +70C or above. This project will explore the role that the different materials used in the assembly and construction of the device and their different CTE (coefficient of thermal expansion) have on the optical performance of the device over temperature. The project will involve both theoretical calculations using spreadsheets of the mechanical expansion and stress and practical measurements over temperature.

Applicant Specification:

Penultimate or final year undergraduate in Physical Science or Engineering.

Minimum Requirements:

Candidate should have an interest in and some experience of one or more of the following topics:

- Semiconductor physics
- Optics, such as ray optics, lenses
- Electronics, design and test
- Photonics, such as optoelectronic devices including lasers
- Mechanical Engineering
- Materials science

Candidate should have good practical skills as well as a strong theoretical background in Physical Science or Engineering.

Preferred Additional Requirements:

Interest in optical communications and satellite applications. Good interpersonal skills, ability to work independently and pro-actively.

Further details:

8 weeks minimum fixed term contract to be agreed with successful candidate but nominally with a start date around June 2019 to attend the SPIN Induction day at the Satellite Applications Catapult, and completion before 20th September for the Showcase the following week. Salary is £1500 per calendar month gross.

Closing Date for Applications: 5pm on the 17 May 2019

Applications should be made through the online form attaching a CV, before the closing date. Please note that elements of the form left incomplete will be deemed to render the application ineligible. They will be checked for eligibility and forwarded to the employer.