

Evaluation of technologies for the design and implementation of optoelectronic functions in scleral contact lenses.

IMT Atlantique



NICOLAS BAUDIN
INTERNSHIPS IN FRANCE INITIATIVE

Name of the hosting institution in France	IMT Atlantique
Name of the host laboratory / research team	Optics department
Address	Technopole Brest Iroise 29280 Plouzané France
Web site	https://www.imt-atlantique.fr/fr
Name of the supervisor	Alexandre Khaldi
Function	Lecturer
Email	alexandre.khaldi@imt-atlantique.fr
Phone number	0033229001522

Internship offer

Topic of the internship (title)	Evaluation of technologies for the design and implementation of optoelectronic functions in scleral contact lenses.		
Proposed dates of the internship*	Start	2020-10-01	End 2021-02-28
* The supervisors have indicated the dates proposed are flexible and are able to be postponed subject to COVID-19 border closures.			
Scientific and academic objectives of the internship (detailed description of the internship content, work expected from the intern and expected outcomes):	<p>The Optics and Micro-wave Departments of the IMT Atlantique are developing flexible electronic circuits for smart contact lenses. The successful candidate will contribute to the study, design and fabrication of flexible electronics. The Internship aims to take advantage of the possibilities of the Arago platform and the micro-wave department to design, develop, and fabricate complex electronic circuit on flexible materials in order to integrate complex functionalities into contact lenses - different materials will be used for the circuitry or battery substrates (stretchability, flexibility, moulding, biocompatibility etc.) to provide flexible electronics.</p> <p>- optimization of the encapsulation into a limited volume using the currently developed tools to optimize the use of available space: 3D design with solidwork</p> <p>- functional testing. As an illustration the student will have to optimize the encapsulation of a harvesting antenna into a scleral contact lens, on curved surfaces.</p>		
Name of industrial partner	LCS and E3S		
Role of the industrial partner in the internship project	LCS is specialist in the fabrication and design of scleral contact lenses. They will provide the scleral contact lenses dedicated to the insertion of optoelectronic properties. Eyes Tripe Shut (E3S) will conceive the electronic circuitry dedicated to the functionalities.		
Main contact at the French industrial partner	Laure Adam , Samir Bentahar		
Email	laure.adam@laboratoire-lcs.com , sbentahar@eyes3shut.com		
Name of the Australian partner institution	University of South Australia		
Name of lab/department/team involved in the Collaboration at the Australian partner institution	Coatings Group, Future Industries Institute		
Main contact in the Australian partner institution	Drew Evans		
Function	Associate Research Professor		
Email	drew.evans@unisa.edu.au		
Outside of this ongoing collaboration, will applications coming from students of other eligible Australian universities be considered by the hosting institution in France?	Yes		

Expected profile of applicant

Level of study	Master's student
Discipline	Electronics, Materials, Nano/microtechnologies
Required qualities, knowledge and skills	<p>To fulfil the tasks assigned by the IMT Atlantique in this project, the selected student's tasks will include:</p> <ul style="list-style-type: none"> • Component assembly on flexible substrate with a pick and place machine • Study of different electrically conducting adhesives • Inkjet printing and electrodeposition of complex circuits • Characterization of mechanical properties after having developed of a system for bending tests • Participate in progress meetings, report writing ...
Other specific eligibility criteria	<ul style="list-style-type: none"> • Cleanroom and photo-lithography experience • Taste and aptitude for laboratory experimentation (fabrication) and practical applications. • Ability to work and write scientific reports