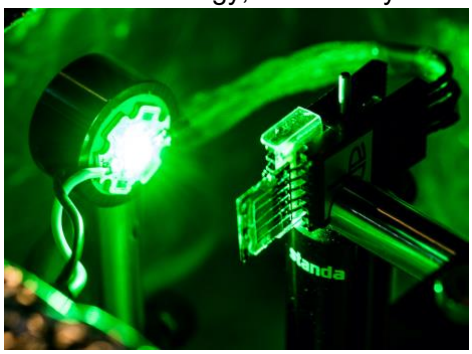
2 YEARS POSTDOCTORAL FELLOWSHIP – UNIVERSITY OF BORDEAUX

ORGANIC PHOTODETECTORS

Photodetectors play a vital role in a wide range of everyday applications, including telecommunications, space exploration, and healthcare. The market provides a variety of technologies designed to meet specific performance criteria—such as detectivity, spectral range, responsivity, and frequency cut-off—according to end-user demands. Highly integrated photodetector arrays are essential for applications like imaging systems and cameras, while individual components are well-suited for functions such as object detection.
Currently, most photodetectors are based on inorganic semiconductors—silicon for the visible spectrum, and III-V or II-VI compounds for ultraviolet and infrared detection. These materials are costly and often rely on toxic or critical raw elements, many of which are scarce or not readily available within Europe. Additionally, current photodetector technologies contribute significantly to the growing problem of global electronic waste (e-waste). In 2022 alone, 62 million tons of e-waste were generated worldwide—an average of 7.75 kg per person—marking an increase of 28 million tonnes since 2010. This figure is expected to rise to 82 million tonnes by 2030. Alarmingly, only 22.2% of e-waste was properly recycled in 2022, largely due to complex recycling processes and insufficient regulatory frameworks
Therefore, green manufacturing processes with appropriate degradability or re-usability may supply a way to fundamentally solve the problem. In this context, we plan to revisit the OPD architecture in order to use biomaterials for the fabrication of the devices. To go beyond the current technology, we not only have to substitute oil-based materials, but we also need to simplify both processing and the device architecture to strongly reduce the environmental footprint of OPDs. These constraints guide the conception of the new OPD architecture and the selection of materials in order to address the issue of the e-waste. The project has been awarded by the French research national agency (ANR) and gather 3 research groups (chemistry and electrical engineering) located at the University of Bordeaux.



Organic Photodetector

The objectives of the postdoctoral project are:

- **Development of non-metallic electrodes**
- **Fabrication of biodegradable OPD**
- **Optoelectronics characterization of biodegradable OPD**
- **Device modelling and architecture optimization**

The fabrication and optoelectronic characterizations will be carried-out at IMS using the ELORGA and ELORPrintTec platform facilities.

Candidate's Profile:
The candidate holds a thesis in organic electronics with a background in material science, physics and/or optoelectronics device physics. Good python skills are required for the modelling part.
Starting date: Postdoctoral position is opened starting from March 2026 for 24 months.
Salary: 2600€ net
Localisation and Supervision:
He/She will be located in the « Laboratoire de l'Intégration du Matériau au Système (IMS – CNRS UMR 5218) », in Bordeaux, France and will be working in the ELORGA team.
Application:
Applications have to be sent by mail at Dr. Lionel HIRSCH (Research Director at CNRS - lionel.hirsch@ims-bordeaux.fr)

The application will include a complete CV, a motivation letter, a copy of the PhD diploma, transcripts of Master 1 and 2, references and 2 recommendation letters.