Laboratoire de l'Intégration du Matériau au Système CNRS UMR 5218

Internship Offer

Development of N-type Organic Electrochemical Transistors

Applications of organic electrochemical transistors (OECTs) as chemical/biological sensors and neuromorphic circuits are particularly appealing due to their high transconductance, efficient electron-ion coupling, compatibility with aqueous solutions, conformability and low voltage operation. Despite the significant progress in OECT technology, the development of n-type OECTs (n-OECTs) has lagged behind their p-type counterparts. Nevertheless, n-OECTs are essential for direct anionic sensing as well as for the complementary circuits that offer improved performance, stability, and energy efficiency. In this project, organic electronics group at IMS laboratory (Bordeaux, France) aims to advance the performance and applicability of n-OECTs for innovative bioelectronic systems in collaboration with chemist and biologist partners.

The intern will be involved in the fabrication and characterization n-OECTs, using either the direct deposition of n-type molecules/polymers or the electropolymerization of synthesized monomers. Through this project, the intern will gain hands-on experience in all key aspects of OECT fabrication and characterization, including ink formulation, photolithography, thin-film deposition, electrochemical analysis, and morphological and structural characterization. He/She will also investigate the relationships between material properties, processing conditions, and device performance with particular emphasis on electrical and electrochemical characteristics, operational stability, and reproducibility.

The candidate should have a background in materials science, chemistry, physics, electrical engineering, or a related field. A strong interest in organic electronics, organic semiconductors, and electrochemical devices is expected.

Starting date, duration and stipend: Internship starts from February/March 2027 for a duration of 5/6 months. Monthly net stipend will be about 700€.

Application: Please send applications by mail to:

Dr. Mamatimin ABBAS (mamatimin.abbas@ims-bordeaux.fr)
Dr. Damien THUAU (damien.thuau@ims-bordeaux.fr)

The application documents should include a complete CV, a motivation letter and past academic records.