

Laboratoire Colloïdes et Matériaux Divisés

Postdoc:

Materials and interface structure for innovative applications of acoustic imaging

Context

The Laboratory Colloïdes et Matériaux Divisés (LCMD/CBI) from Ecole Supérieure de Physique et Chimie Industrielles of Paris (ESPCI) is integrated in the large scientific cluster in the heart of Paris. This laboratory has built its research starting from the physics and the chemistry of colloids and their interfaces. In this way, emulsion science has been revisited with modern tools such as microfluidic technology. Magnetic colloids have been the subject of numerous research work that shed new light on their physical properties and their unique application in biotechnology and biophysics. Today, the lab discovers, invents and innovates at the intersections of disciplines between chemistry, physics and biology. It creates novel approaches and new materials for biology, revisits and upgrades old processes of material manufacturing and is fascinated as much by the research and development that emanate from its spin off.

This research program is carried out in collaboration with the company ID4US, which is a young Grenoble start-up specializing in the development of biometric sensors based on ultrasound technologies. ID4US is attached to the French group Doliam, recognized in particular for its activities in the field of medical ultrasound and "Med-Tech" in general. A key point for the implementation of the sensors developed by the company is the quality of the acoustic propagation between the transducer and the measured object. This depends directly on the properties and arrangement of the materials used as interface layers. This project is an opportunity to extend the know-how of the company by a potential recruitment of the candidate in case of success.

Objectives

The proposed position consists of designing and developing original solutions for these coupling layers. Among other things, the candidate will have to understand complex specifications in order to guide the selection of materials, propose different combinations of composite materials and associated production processes, estimate their performance, and develop functional prototypes. The development of solutions will be done in close collaboration with the ID4US team, which will guarantee that the various constraints and specificities of the targeted applications are taken into account.

Specific goals :

- To identify families of materials and possible combinations to form high-performance composites
- To propose and implement an approach for the selection of materials and the consideration of the various constraints of a complex specification
- To establish merit criteria, and the key properties to be measured experimentally (as well as the associated means of characterization)
- To develop one or more solutions (including shaping and prototyping) based on composite materials

- To implement the proposed approaches within the framework of functional prototypes

Profile

We are looking for a candidate who has completed a doctorate, or who has an engineering degree, in physico-chemistry of soft matter, composite materials or polymers. High motivation, flexibility, autonomy, the ability to work in a highly multidisciplinary team and good interpersonal and communication skills are essential.

Start date: as soon as possible

Duration: 12 months followed by a potential recruitment within ID4US

Please send a CV with references and a motivation letter to Nicolas Bremond:
nicolas.bremond@espci.fr