Post-doctoral position

Development of simulation tools for printed electronic devices targeting energy and communication applications

Employer: University of Limoges, CNRS (France)
Workplace: XLIM Research Institute, Limoges, France (www.xlim.fr)
Expected starting and ending dates: 04/2019 – 04/2020
Gross salary: around 2600 € per month
Keywords: Modelling, Simulation, Transport &Optical Properties of Materials, Photovoltaics, Optoelectronics.
Scientific supervisor: Dr. Arnaud Beaumont, research engineer and coordinator of the PREMISS platform, arnaud.beaumont@xlim.fr, phone: +33 5 87 50 67 52.

A post-doctoral position is proposed at the XLIM laboratory for the development of numerical simulations on printed electronic devices. This work will be done in the framework of a research project "from material to device" conducted by the Labex Sigma-Lim. The Labex Sigma-Lim is a joint academic research laboratory with a label of "Laboratory of Excellence" (ANR grant) since 2011. It emerges from collaboration between XLIM Institute (Electronics, Microwave, Photonics, Mathematics, Informatics and Cryptography) and IRCER Laboratory (Science of Ceramic Processes and Surface Treatments). One of the objectives is to build by inkjet printing a new generation of electronic and optoelectronic devices (organic or perovskite) especially targeting visible light communication emitters and receivers.

In this context, many designs have been developed, including new materials and device architectures. Besides, a simulation work has been done but several elements (models and simulation tools) are missing to enable the design of large circuits and systems. Therefore a second modelling/simulation effort has to be carried out, which could greatly benefit from the simulation platform named as PREMISS (http://xlim.fr/en/plateforms/premiss), created in 2014 by the XLIM institute to bring together models and simulators present in the laboratory and to include some of them in a system simulation tool developed at the XLIM institute. This tool is called SCERNE and it is a system level simulator, which allows the performance evaluation of large scale systems with a high precision thanks to a seamless hierarchical modelling approach combining physics, RF circuit simulation, EM, thermal, mechanical simulation, and measurement-acquired data mining. It allows an early evaluation of complex architectures and/or innovative concepts. Nowadays commercially available simulation tools do not take into account all thermal, electro-optical models suitable for organic, hybrid and composite materials. The open post-doctoral position is therefore required in order to develop a multiphysical model approach spanning from physical properties of materials up to device design with the possibility to enable later circuit and system design. The work environment will consist of facilities and supervision of PREMISS and PLATINOM platforms. PLATINOM is the XLIM technological platform and a part of it is devoted to printed electronics, http://www.xlim.fr/en/plateforms/platinom/components-and-devices#ELITE).

Profile of the candidate:
The postdoctoral position is open from the end of 2018 / beginning of 2019. We are looking for a highly motivated young researcher presenting a relevant experience in the general field of organic and hybrid electronics, particularly in device modeling and coupling between transport and thermal effects . Experience in SPICE language and device simulation tools would be appreciated, whether these are commercial tools (SILVACO) or developed with a programming language. Good communication skills as well as suitable team working abilities will also be highly appreciated. Applicants must send their cover letter, a detailed CV including a list of publications, as well as two references, to:

Dr. Arnaud Beaumont, arnaud.beaumont@xlim.fr