CNRS profile : Electron devices physics

The semiconductor industry is presently facing numerous challenges. One of them consist in the worldwide capability issue, which is leading to massive joint investment of compagnies and government, showing how strategic this field is. Since its beginning, this industry has always worked hand in hand with academic research, due to the inherent complexity of semiconductor technologies. This has led to the birth of a vast and fruitful field of physics, which deals with the understanding of electron devices, involving both theoretical and experimental aspects. Within this field, the study of current fluctuation in these devices, the variability of their characteristics and their failures due to material or technology related defects, together with the development of corresponding electrical m easurement and accurate compact models, has massively improved over the last decades.

IMEP-LaHC is an internationally renowned laboratory, in particular for its expertise on the electrical characterization of electron device, and more specifically on the methodologies to analyse defects signatures in electrical dynamic signals (low frequency noise, traps spectroscopy). The many recent request from industrial partners for research collaboration with our lab confirms the significance of this problematic and highlights that the many scientific challenges will be overcome only with a deep understanding of the defect physics inside semiconductor electron devices. This hence strengthen the will of IMEP-LaHC to stand as a leading lab in this field. The lab is therefore already following this fruitful track through many founded project and joint labs with compagnies.

In addition, the present environmental issues, the increased number of functional materials (IV-IV, III-V, II-VI, organic, perovskite, functional oxides, 2D …), the architecture diversity (transistor, memory, sensors, imagers, photodetectors…) and their increasing complexity will keep academical expert strongly involved in this problematic for the forthcoming years. This topic is therefore perfectly in line with the long-term strategy of the CNRS in France.

If you are a skilled and motivated graduated PhD, if this field strikes your curiosity and if you are willing to challenge yourself in this complex topic, the lab is currently looking to guide outstanding young researchers through the selective process of obtaining a permanent position in CNRS, one of the world leading research institutes.

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