Post-doctoral fellowship in microelectronics

SiC Process engineering and AFM characterization

University of Tours - GREMAN laboratory

Porous silicon and wide band-gap semiconductors (SiC, GaN) are the subject of intensive research and development activities. This growing attention is motivated by the attractive properties of these materials, suitable to achieve efficient electrical devices.
Since many years, in the framework of numerous national or European projects, GREMAN has developed know-how on these topics, from the material elaboration to the electrical characterization of the devices achieved. But to ensure a wide understanding of the electrical behavior, characterization step is required at the nanoscale.
By means of the Atomic Force Microscopy (AFM) electrical modes (Scanning Spreading Resistance Microscopy, Scanning Capacitance Microscopy, conductive AFM …), it is possible to get local information about the electrical activity of the defects or the carrier profiles. This evaluation is crucial to develop efficient electrical devices, based on porous silicon and/or on wide band-gap semiconductors.

As a post-doctoral applicant, you will have to elaborate porous semiconductor materials (silicon or silicon carbide) in cleanroom environment. These materials are synthetized by electrochemistry in hydrofluoric acid based solutions. The etching conditions must be optimized adjusting the applied current density or the electrolyte conditions. These porous semiconductors exhibit remarkable electrical and thermal properties that suitable for many applications in microelectronics.

The characterization of a wide variety of samples will be performed by means of AFM electrical modes available (SSRM, SCM, c-AFM …) at GREMAN. Your capacity to work in close collaboration with other people of the team (PhD students, post-doctoral applicants, professors…) is crucial.

Our team is directly located on the STMicroelectronics site of Tours, where are located the cleanroom and the characterization tools.

Background and candidate profile:

The candidate must have a doctoral degree in semiconductor physics or material science, and:

- Knowledge in semiconductors with a significant experience in cleanroom
- Expert in the electrical modes of AFM (SSRM, SCM …)

- Experience on wide band-gap materials and/or on porous silicon would be appreciated
- Ability to work in close collaboration with the team members
- English language necessary

To apply for this position, a CV, a cover letter including date available to start and the names of three references are mandatory.
Contract duration: 1 year minimum

Contact :

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