



**Position: Process engineer fellowship at GREMAN (Tours University)**

**Starting date: As soon as possible**

**Topic: *device and test structure realization for GaN power applications***

Wide band-gap semiconductors (SiC, GaN) are the subject of intensive research and development activities. This growing attention is motivated by attractive material properties which make silicon carbide and gallium nitride promising materials for high power and high temperature electronic devices. GaN can be heteroepitaxially grown on silicon substrates even though the lattice mismatch is still high. The capability to grow the material on low cost and large diameter silicon substrates becomes then an extremely attractive solution for manufacturing. On the other hand, GaN bulk material starts to be available offering an alternative to SiC for some higher voltage applications. In this framework, power High Electron Mobility Transistors (HEMT) as well as Schottky barrier diodes (SBD) and p-n junction diodes have nowadays broad developments.

Since many years, GREMAN has developed know-how in GaN processing and characterization (Physical and Electrical) for industrial power applications. It is also to note that HEMTs and SBD generally require AlGaIn/GaN heterostructures when using lateral structures and that AlScN/GaN heterostructure is developing fastly. In the case of vertical GaN SBD other material solutions are possible, often requiring the addition of p-type GaN layer. Such layer can also be used in lateral devices to increase their reliability.

For this position, we are hiring a process engineer to prepare devices and test structures based on materials that will be developed in the framework of the GaN4AP European project. The aim of the realization is to better understand the impact of process step on reliability devices. This work will be in direct continuity with the work done in GREMAN on GaN. The candidate will be integrated in the team working on GaN (4 permanent researchers, 2 postdocs, 2 PhD students). The main processes, that will be performed, will aim to realize devices, obtain contacts (Schottky and Ohmic) or modify doping of the material. It will require to work within CERTeM platform (common with STMicroelectronics Tours), doing deposition, photolithography, annealing or etching on III-N material.

### **Background:**

The candidate must have a Master Degree in material science or micro- & nano-electronics ready for teamwork. Knowledge in semiconductors and micro- & nano-technologies is essential. Background and practice in fabrication process (Front-End) is important for this position. A candidate with cleanroom experience (event during training period) can be considered.

This work will be done in the framework of a national project and the European project ECSEL-H2020 GaN4AP in close cooperation with project partners both academic (CNR-IMM, CRHEA, FhG) and industrial ones (here in particular, STMicroelectronics).

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

Contract Duration : 2 years

### **Contact:**

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