EMPLOYMENT PORTAL SECTION	Post-doctoral position *Fixed-term contract*
Position	**Post-doctoral researcher in scanning tunneling luminescence studies of localized electronic states**
General information	***Reference*** **: ANNDUJ002** ***Workplace*** **: Laboratoire de Physique de la Matière Condensée (LPMC), Ecole polytechnique, 91128 Palaiseau** ***Date of publication : 11/01/2019*** ***Type of contract : 2 years fixed term with possible extension to 3 years.*** ***Contract period : 2 years initially*** ***Expected date of employment : 2019 — 2021 with a possible extension to 2022*** ***Proportion of work (e.g full-time=100%) : 100 %*** ***Remuneration : 2600 € to 3400 € per month depending on prior experience*** ***Desired level of education : minimum requirement, Ph.D. in a field related to semiconductor physics*** ***Experience required : previous experience in a research setting outside France would be an advantage***
Assignment	The candidate will join the Electrons-Photons-Surfaces (EPS) group of the LPMC and will be in charge of two Scanning Tunneling Electroluminescence (STL) microscopes: one based on an Omicron STM setup operating at variable temperature down to 4 K in the ambient atmosphere of the exchange gas and the other on a RHK instrument operating in UHV at variable variable temperature between 30 K and 600 K. The EPS group is currently using these equipments for the development of two projects which concern the study of localized electronic states in semiconductor devices. These projects, funded by the ANR, are coordinated by Jacques Peretti (jacques.peretti@polytechnique.edu) and Alistair Rowe (alistair.rowe@polytechnique.edu). The candidate will participate in these two projects and will contribute to the supervision of PhD and Master students. He/she will also have the latitude to develop his/her own research direction. This position would therefore be suitable for someone interested in applying for a permanent position at the CNRS.
Research activities	The candidate will participate in the research activities of the EPS Group which focus on the study of the localization of charge carriers by alloy disorder or crystal defects at the atomic scale in semiconductors - In the first case, the systems under study will be based on nitride semiconductor compounds and hetero-structures that constitute the active part of devices (LEDs, lasers) for lighting. In these devices, the intrinsic alloy disorder is responsible for potential fluctuations that induce carrier localization. There is growing evidence that localization effects play a major role in the device performance. STL microscopy should permit a study of the influence of localization on radiative and non-radiative recombination processes. - In the second case, the work will focus on semiconductor nanostructures where electronic transport is governed by the dynamics of the traps formed by atomically localized states at crystal defects. STL microscopy should provide spectroscopic information on the localized states involved at the relevant scale.
Skills	The successful candidate will have a strong background in semiconductor physics with a Ph.D. level qualification in this or a related area. Prior experience with scanning probe techniques would be a significant advantage. The candidate should be able to provide proof of his/her ability to formulate a scientific project, and to publish and promote his/her research. An aptitude for work in a team environment is considered essential.
Work environment	**LPMC is one of 22 laboratories located within Ecole polytechnique's research centre, with expertise in the nanosciences and in the physics of disordered systems. The laboratory has its own mechanical and electronic workshops which are significant advantages in experimental physics activities like that proposed here. In the context of the STL activities, the post-doctoral scientist will have the opportunity to work with our collaborators, including those from EPFL (Switzerland) and the University of Melbourne (Australia).** **The laboratory is jointly run by the CNRS, France's national scientific body, and the Ecole Polytechnique. The EPS group is looking to renew its permanent scientific faculty over the coming years, and as such a successful post-doctoral scientist should envisage a possible application for tenure with the CNRS.**
Constraints and risks	The post-doctoral scientist will have the opportunity to present his/her results not only within France, but in the setting of international conferences. Periods of travel within, and outside, France should therefore be envisaged.
Supplementary information	**For further information regarding the Condensed Matter Physics Laboratory, visit the website :** **https://pmc.polytechnique.fr/**