

Junior Professorship in “Materials engineering, hybrid heterostructures for quantum technologies and neuromorphic computing platforms”

Institute of Electronics, Microelectronics, and Nanotechnology (IEMN)

Lille, France

Context: IEMN is a major player in micro/nanotechnologies and their applications. With more than 450 employees of 40 different nationalities, IEMN brings together most of the research in Hauts-de-France, from nanoscience to instrumentation in the field of micro-nano-technology. With a budget of €28 million, 5 supervisory bodies (CNRS, University of Lille, University Polytechnique Hauts-de-France, Centrale Lille, Junia), 1600 square meters of clean rooms, two certified micro-nano-fabrication and multi-physics characterization platforms, IEMN develops high value-added miniaturized technologies in electronics, photonics, quantum technologies, telecommunications, health technologies, electrical energy, the Internet of Things and transportation.

Desired profile: The laboratory is looking to strengthen its technological and scientific skills in the development of new micro-nano-technologies in the following two directions:

- Quantum materials and 2D hybrid heterostructures engineering (growth such as Molecular Beam Epitaxy, fabrication, device technology and characterization)
 - The last years have seen a rapid increase in the number of new materials with promising properties. Their many possible combinations open up vast prospects for high-speed communications, digital computing (complex and/or energy-efficient), quantum computers or sensors, but require perfect mastery of their large-scale production and integration into robust electronic systems.
- Neuromorphic technologies at the interface between biology and electronics
 - Neuromorphic engineering is an interdisciplinary field that aspires to the development of artificial systems employing some physical properties of the information representations found in biological neural systems. In parallel, neuro-system engineering which aims at studying neural systems, enhancing or replacing neuronal function with engineered devices such as biosensors, multielectrode arrays or even neural prostheses has also considerably progressed in the past years.

Offer: Tenure track lecturer for a period of 3 to 5 years, depending on the candidate's experience. Afterwards, if the evaluation is positive, the candidate will be permanently appointed as senior lecturer or researcher. Starting date 01/09/2024 - Salary (~45k€/year gross) - Teaching load (64h/year).

Financial resources: starting grant (ANR) of 200k€ (equipment, PhD, operating expenses) plus a recruitment of PhD (~120k€). The candidate will be able to supplement these funds by submitting specific research projects (ERC, ANR, Horizon, Region, CIFRE, etc.).

Candidate qualification:

- A Ph.D. and a professional experience in a relevant field.
- A strong record of research and scholarly publications.
- Experience in the field of academic education.
- A strong involvement in setting up, monitoring, carrying out and steering national and international partnership projects (ANR, Europe, ERC) is expected during the contract. Previous experience in this field would be a plus.
- Cooperative attitude and ability to lead a research group.

- A high level in English is required. Knowledge of French language would be an asset but the recruited person will have the opportunity to learn French at the required level.

Application process:

Interested candidates are invited to submit their application including:

- Cover letter outlining their research and areas of expertise.
- Curriculum vitae, including a list of publications and courses taught.
- Names and contact information of three references.

More information is available from Dr. Thierry Mélin, Director of IEMN, or Christophe Delerue, Scientific Director of IEMN. Generic mail: direction@iemn.fr.