

Deadline for registration of applications on Galaxie:

March 31, 2022 at 4 pm

JOB DESCRIPTION

Emploi : Maître de conférences (Associate Professor)
Section du CNU : 28
Département : engineering physics and materials (GPM)
Laboratoire : Institut FOTON - UMR 6082
Profil : Modeling the electronic properties of materials

Employment environment:

INSA Rennes, a founding member of the INSA Group, is the largest public engineering school in Brittany. It welcomes 2,200 students and apprentices and graduates more than 340 engineers, 60 masters and 40 PhDs per year. Composed of 10 teaching departments, including 7 specialties and an apprenticeship program, and supervised by 6 research laboratories, INSA employs approximately 500 public employees (research professors, teachers, permanent and contractual employees) and more than 400 temporary employees, particularly from companies.

By positioning itself as an impact institute, INSA Rennes intends to be part of a positive metamorphosis aimed at building a more just and sustainable world for future generations. Being an engineering school today, producing skills and knowledge, requires more than ever to assert its responsibility; to anticipate the impact of inventions on individuals, society and the environment; to place itself at the service of a reasoned economy and social progress that is a source of well-being.

More aware than ever of its social impact, the school also intends to go further in diversifying profiles and providing each student with the keys to fulfill his or her potential and succeed in his or her studies, regardless of the educational investment he or she made before entering a prestigious school.

The Impact Institute is first and foremost a lever for transformation in the service of society and for meeting the challenges of the 17 sustainable development goals defined by the United Nations.

This affirmed trajectory has been materialized by the adoption of its 2021-2026 strategic plan, which can be consulted on the school's website: www.insa-rennes.fr

Specific context: Creation of a Perovskite Chair

INSA Rennes wishes to recruit a high-level academic staff to strengthen the international and contractual activity of the FOTON Institute in the field of perovskites with spin-offs in teaching, particularly for the Physical and Materials Engineering (GPM) department. Specific human and financial resources will be made available for this purpose during the first three years (duration of the chair), to support the start of the activity of the associate professor on this topic in the framework of an International Perovskite Research Chair.

Hosting Laboratory: FOTON Institute, INSA Rennes

Director of the FOTON Institute: Mehdi Alouini (directeur@institut-foton.eu)

Head of the INSA component of the FOTON Institute: Charles Cornet (charles.cornet@insa-rennes.fr)

Head of the perovskite team: Jacky Even (jacky.even@insa-rennes.fr)

The "Optical Functions for Information Technology" Institute is a joint research unit involving the CNRS (mainly attached to the INSIS, and secondarily to the INP and the INC), the UR1 (Enssat, the IUT of Lannion and the UFR SPM), and INSA Rennes, with a staff of about 120 people, including 75 permanent staff. The unit generates a scientific production of more than 100 papers per year, and is one of the leading public research forces in France in its field.

The Foton Institute is structured in three teams: DOP (leader François Bondu), OHM (leader: Charles Cornet) and SP (leader: Monique Thual); as well as three platforms: CCLO (technical leader: Parasteh Pirasteh), NanoRennes (technical leader: Thomas Batté), and Persyst (technical leader: Mathilde Gay). The specificity of Foton is therefore to gather around common programs three teams and three platforms covering targeted areas of photonics: the physical layer of telecommunications, technologies related to industrial and defense applications (optical sensors, lasers, instrumentation for photonics) and photovoltaics.

Hosting Teaching department: engineering physics and materials

Name of the department head: Soline BOYER (soline.boyer@insa-rennes.fr)

Specific skills required :

Research :

The person recruited will have to be part of the simulation group of the FOTON Institute and contribute to the flagship theme of halogenated perovskites for photovoltaic and optoelectronic applications (see axis 5 of the UMR FOTON Institute: <http://foton.cnrs.fr/v2016/article2901.html>). The chairholder is expected to play a leading role in strengthening international collaborative and contractual activities in the USA (CINT project) or in Europe (H2020 Polloc, Perocube, Dropit projects). He/she will have to rely on academic and industrial partners linked to these projects (Univ. Rice (Houston), Univ. Northwestern (Chicago), Univ. Oxford, ETH (Zurich), Los Alamos National Laboratory, IBM, StMicroelectronics, Saule, Avantama...)

The person recruited should be a specialist of the electronic properties in the field of solid state physics and/or chemistry, and in the methodological developments dedicated to the use of large experimental facilities or complex semiconductor heterostructures. He/she should master empirical simulation methods (k.p / strong bonds) and/or DFT-type atomistic simulation methods (based on codes such as abinit, siesta, quantum espresso, VASP...), and post-DFT (DFPT, GW, BSE...). Solid knowledge in crystallography, use of large research infrastructures related to diffraction and practical knowledge on structural and optical characterization techniques of materials will be appreciated.

As part of the research chair, the FOTON laboratory offers an exceptional research environment designed to support the launch of the candidate's activity in the above-mentioned field, during the initial three-year period linked to the chair:

- The supervision of a post-doctoral researcher for a period of one year
- The acquisition of additional dedicated computing resources on the INSA computing cluster
- Operating funds dedicated to the participation in international and national conferences and to missions/stays with FOTON laboratory collaborators in the USA or in Europe

Teaching:

The person recruited will be assigned to the GPM department. The training courses concerned will mainly be the GPM engineering speciality and the Science and Techniques for Engineers department (STPI-1er Cycle). She will benefit from a partial teaching release during the initial three-year period linked to the chair.

For the teaching within the GPM department, the aim is to meet existing needs in the fields of electronics, materials physics, and digital simulation, particularly in the 3rd and 4th years, by emphasizing the transition to project-based teaching in English, and by introducing new teaching related to quantum technologies.

An investment in the supervision of internships and in the setting up of projects with industrial partners is also desired.

For the teaching within the STPI-1er Cycle department, the person recruited will be integrated into the physics teaching team and will essentially be in charge of practical work in physics (electricity, optics, thermo-energetics, waves, electromagnetism).

The detailed description of these courses can be found in the ECTS sheets available on the INSA website or by contacting the relevant department heads.

For more information, please contact

Soline BOYER (soline.boyer@insa-rennes.fr) - Head of the GPM department
Charles CORNET (charles.cornet@insa-rennes.fr) - Head of the FOTON component - INSA Rennes
Mehdi ALOUINI (directeur@institut-foton.eu) - Director of the FOTON Institute