



Post-doc position (24 months)

Atomic-scale analysis of 1D heterostructures based on carbon nanotubes by advanced transmission electron microscopy

A **postdoc position** is open at the Interdisciplinary Research Institute of Grenoble (<https://www.cea.fr/drf/irig>), a research institute which depends on the CEA-Grenoble and the Université Grenoble Alpes (UGA). This position is offered in the framework of the ANR project DARWIN, in collaboration with the L2C (Montpellier) and the CINaM (Marseille) labs, dedicated to the chiral selectivity of carbon nanotube growth.

The control of structural chirality in single-wall carbon nanotube (SWCNT) is one of the most important challenges remaining in 1D electronics and photonics. The main objective of the postdoc project is to elucidate the detailed atomic structure of chiral heterojunctions occurring along SWCNTs during their CVD growth, such as chirality, defects and molecular structure, using advanced electron microscopy (HR-TEM and -STEM), in order to elucidate the mechanisms of chiral selectivity. One-dimensional van der Waals (vdW) heterostructures made of boron nitride (BN) deposited on SWCNTs will also be investigated to study the growth of BN and its impact on the optical properties. EELS will be used for chemical analysis including the bonding state and the 4D-STEM techniques will be applied for a simultaneous chiral and charge density mapping in the extremely thin C-BN twisted 1D vdW heterostructures.

Hosting laboratory

The postdoc will be hosted in the Laboratory of Advanced Electron Microscopy for Materials Study (LEMMA) of the IRIG institute. Our lab is a part of the CEA nanocharacterization platform (PFNC), which gives access to a wide range of state-of-the art facilities including ThermoFisher probe aberration corrected Titan Themis and double-corrected Titan Ultimate (equipped with GIF energy filter, monochromator and a direct electron detector). The group has a strong expertise on 1D and 2D materials study, such as graphene and transition metal dichalcogenides, from transfer and manipulation to atomic scale microscopy analysis. The laboratory is located in the “Polygone Scientifique”, near the city centre of Grenoble, which offers an exceptional working environment as well as a very good quality of life, in the heart of the French Alps.

Qualifications

- PhD in physics, materials science or equivalent
- Expertise/knowledge in electron microscopy with various analytical methods
- Preliminary knowledge on 1D or/and 2D materials would be highly appreciated
- The candidate must be motivated to collaborate with project partners in the framework of a national research consortium

Application

Interested candidates must send curriculum vitae, a motivation letter, a list of publications and 2-3 references or reference letters.

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Deadline: 15/05/2022