The Nanoscience Cooperative Research Center, CIC nanoGUNE, located in Donostia / San Sebastian, Basque Country (Spain), is currently looking for a

MASTER STUDENT

to work on

Ultrathin water layers on soft materials - a challenge for probe microscopy and reflectometry

NanoGUNE is a research center devoted to conducting world-class nanoscience research for a competitive growth of the Basque Country. NanoGUNE is a member of the Basque Research and Technology Alliance (BRTA) and is recognized by the Spanish Research Agency as a María de Maeztu Unit of Excellence.

Master:
The challenge is probe microscopy of the surface of liquid water. The laboratory part of the MSc is based on preparing soft flat layers which mimic typical virus envelopes. The focus is on 4 nm thick lipid layers, which make up the external surface of airborne viruses (influenza, CoV etc.). The aim is finding the location of adsorbed liquid water - either as ultrathin film, or in "puddles" - by scanning the lipids with atomic force microscopy in a humid atmosphere.

PhD:
The project will be extended to more complex and realistic surfaces as present on viruses, esp. lipids hat are glycosylated and dotted with "virus spike" proteins. Of those, the so-called hemagglutinin protein on influenza virus particles is of greatest relevance for a potential pandemic, against which virologists are currently preparing. Our experimental approach will be based on atomic force microscopy combined with neutron reflectometry, carried out at ILL Grenoble (France) and ESS Lund (Sweden) (max 2 weeks per year), to apply the most sensitive methods to detect ultrathin water layers. Common knowledge is that viruses are only stable in contact with water, but recent evidence shows that air of surprisingly low humidity (30-50%) does no damage - the underlying mechanism or explanation for this is unknown, and the presence of proteins could be the answer. The final aim of the work is finding a general rule or physics law that explains the stability of viruses.

The student will join the **Self-assembly Group**, led by **Prof. Alexander Bittner** (a.bittner@nanogune.eu). More information can be found at:
https://www.nanogune.eu/en/research/groups/self-assembly

Candidates should **apply** by completing the **form below** and attaching the following documents:

a. A complete CV
b. A cover letter

The **deadline** for applications is **13/03/2025**.

NOTES:
(i) All applicants will receive an answer after the end of the selection process; but please note that due to the large number of submissions that are expected, we cannot provide individual feedback.
(ii) Additional information about nanoGUNE's commitment towards HR excellence in Research and Gender Equality are available on our website.
(iii) We encourage you to subscribe to our HR mailing list to receive information related to nanoGUNE's open positions and open calls for different training and talent attraction programs.


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