

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

Compressive sensing in scanning probe methods

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.

The **position** is offered in the **Self-assembly Group**, led by Alexander Bittner. More information can be found at <https://www.nanogune.eu/en/research/groups/self-assembly>

Project Description

Nanoscale surface imaging methods can be rather destructive – in scanning electron microscopy (SEM) and in SPM (scanning probe microscopy), esp. atomic force microscopy (AFM), samples can easily be damaged by electron impact and by mechanical contact, respectively. The self-ass group at nanogune has addressed this for proteins, water, and ice.

Most scanning images contain only small regions of interest, or repetitive objects, both of which open the way towards data compression. This principle can be reversed to so-called “compressive sensing”, where only a part of the area (30 to 70%) is recorded, a huge improvement in preserving sample integrity. Hence, we require easily applicable random scanning, but substantial mathematics and coding efforts.

The master student will:

1. Evaluate AFM and SEM images
2. Programm compressive sensing algorithms for the images
3. Develop new scanning strategies for SEM and AFM.

Candidates should **apply** by following the instructions and recommendations of the general call and by completing the form below and attaching the following documents:

- a. A complete CV
- b. Academic record and cover letter grouped in a single PDF file

The **deadline** for applications is **06/04/2026**.

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.

