

## Two PhD positions in Nanomagnetism:

### Work on cutting-edge magnetism research funded by the European Research Council (ERC)

The ERC Consolidator Grant project **THERMAGINE** investigates how thermal fluctuations drive magnetization dynamics in nanoscale magnetic materials, and how these effects can be engineered in nanostructured magnetic multilayers. The project combines advanced NV-microscopy measurements on individual nanostructures with large-scale GPU-accelerated micromagnetic simulations. The results are not only of fundamental interest but also aim to improve medical applications such as magnetic particle imaging (MPI) and magnetic hyperthermia for cancer treatment.

The research is carried out within the **DyNaMat** group at Ghent University, which studies nanoscale magnetization dynamics using an integrated approach combining experiments and simulations, for which it is internationally recognized. It offers an interdisciplinary, collaborative, and international research environment.

#### PhD position 1: Experimental nanomagnetism using quantum sensing NV-microscopy

You will experimentally investigate the magnetization dynamics of individual magnetic nanostructures using a state-of-the-art quantum sensing nitrogen-vacancy (NV) microscope. The project focuses on how thermal fluctuations influence nanoscale magnetic systems and how these dynamics can be controlled in magnetic multilayers. You will perform advanced magnetic measurements, analyze experimental data, and work closely with researchers involved in simulations and sample fabrication.

#### PhD position 2: Computational nanomagnetism using GPU-simulations

You will use numerically investigate thermally driven dynamics of multilayer magnetic nanostructures. Using the open-source simulation software mumax, developed within the group, you will perform micromagnetic simulations on high-performance computing infrastructure to investigate how magnetic and structural properties determine nanoscale dynamics. Your modeling efforts will be carried out in a feedback loop to guide an interpret the experimental work and help design optimized magnetic nanostructures for future biomedical applications.

#### What we offer

- 2 fully funded 4-year PhD positions
- Research within a prestigious ERC project
- International, interdisciplinary, collaborative research environment
- State-of-the-art experimental and computational infrastructure
- Conference travel and international collaboration opportunities
- The chance to work on groundbreaking physics

#### Interested?

Contact **Prof. dr. Jonathan Leliaert** (DyNaMat group - Ghent University) for more information:

[jonathan.leliaert@ugent.be](mailto:jonathan.leliaert@ugent.be)