

Hosting offer for Marie Skłodowska-Curie Postdoctoral Fellowships (PF) 2022 at University of Antwerp/research group CMT/Centre of Excellence NANOLab

MSCA Postdoctoral Fellowships are individual research grants offering excellent postdoctoral researchers the chance to develop their skills by means of international mobility. Through the implementation of an original and personalised research project, MSCA Postdoctoral Fellowships aim to foster excellence through training and mobility and to equip researchers with new skills and competences in order to identify solutions to current and future challenges.

University of Antwerp / research group Condensed Matter Theory (also known as Theory of Functional Materials, part of the NANOLab Center of Excellence) invites motivated postdoctoral researchers to jointly prepare an application for the MSCA-PF-2022 call Marie Skłodowska-Curie Postdoctoral Fellowships call (MSCA-PF-2022) with them as host organisation.

Description of Hosting organisation/group

The focus of the CMT research group (Department of Physics, Faculty of Science, University of Antwerp) is on fundamental understanding of the electronic, vibrational, optical, magnetic, and superconducting properties of 2D and bulk materials, as well as on the multiscale description of nano- and atomically-engineered functional materials and devices (of immediate interest to technology-oriented institutes such as imec). On the one hand the group aims to predict the emergent properties, devise the means to control the functionalities, and in silico tailor new materials with desired properties. On the other hand the group collaborates with over a dozen world-leading experimental groups (Manchester, Rutgers, KULeuven, Argonne, Sorbonne, to name a few) to provide theoretical support for understanding their experimental data. Together with several other outstanding labs in Antwerp, CMT forms the NANOLab Center of Excellence, with complementary expertise in the field of nanoscience and nanomaterials at the very forefront of science.

Over the years, CMT became an internationally recognized brand owing to its uniquely broad expertise in several complementary theoretical and computational methods and techniques, such as Density Functional Theory (DFT), molecular dynamics (MD), homemade advanced solvers for tight binding (TB) and coupled higher-order differential equations on a grid, etc (implemented on the locally available HPC Core Facility infrastructure CalCUA). This multiscale approach, next to the years of experience in understanding phenomena at hand, has been an attraction point for a continuous influx of new staff and collaborations to date.

URL <http://cmt.uantwerpen.be>

Topics/expertise

The key domains/topics suggested to postdoctoral candidates for an MSCA-PF application are (list not exhaustive):

- Magnetism in 2D materials (incl. origins, tunability, magnonics, chirality (DMI and skyrmions), magnetoelectric and multiferroic effects)
- Excitonic properties and excitonic superfluidity in van der Waals heterostructures
- Superconductivity and advanced Josephson junctions in 2D materials and heterostructures (among other, towards Qbit applications)

- Moiré physics in 2D heterostructures (in all its aspects)
- In silico design of energy-related materials (catalysts, battery applications, solar cells, water-splitting, etc.)

For the list of present staff and possible advisors within the group one is referred to the website <https://www.uantwerpen.be/en/research-groups/cmt/members>.

Your profile

- The expertise of the candidate should include: deep understanding of solid-state physics and quantum physics of materials; advanced computational skills; being acquainted with abilities and requirements of modern experimental techniques, and the needs of emerging technologies.
 - Required PhD degree: either physics, chemistry, material science, sciences, or engineering
- You must have a completed PhD at the time of the call deadline (14 September 2022).
- Candidates must have a maximum of 8 years full-time research experience from the PhD award date until September 14, 2022. Periods of inactivity in research (e.g. unemployment, periods of employment outside research, parental or sick leave) do not count towards the time of research experience.
- For European fellowships, candidates can be of any nationality and must not have resided or carried out their main activity (work, studies, etc.) in Belgium for more than 12 months in the 36 months immediately before September 14, 2022.
- Highly motivated candidate with an excellent research track record appropriate to career stage, as evidenced by academic publications and other scientific output.

What we offer

- Support and guidance for the preparation of your MSCA PF proposal
- A stimulating, interdisciplinary environment for high-level research.

How to apply?

Indicate your interest by contacting the host institution as follows:

Please contact the Head of the CMT group Prof. Milorad Milosevic by e-mail (milorad.milosevic@uantwerpen.be) with a short CV and motivation to indicate your interest to prepare a MSCA-PF application.

After the supervisor agrees to support you as a MSCA-PF candidate, you can start preparation of MSCA PF project proposal and will be supported further by the supervisor and the Research Support Office of the host university.

For more information on the MSCA PF scheme or the host institution, you can contact the MSCA coordinator of the University of Antwerp: Dr. Liesbet Cockx (Research, Innovation & Valorisation Antwerp, Grants Office): Liesbet.cockx@uantwerpen.be.