

NTNU Nano: Call for proposals for inward infrastructure-related research visits

Purpose of the call

NTNU is Norway's largest university with some 9000 employees and over 40,000 students. The University hosts one of the country's largest activities in nanoscience, and its researchers benefit from access to world-leading infrastructure for nanoscale fabrication and characterisation. NTNU is keen to collaborate with the best nanoscience researchers in the world. Through the strategic initiative "NTNU Nano", it is therefore releasing funds for external researchers to access three of its leading nano-related infrastructures: NTNU NanoLab, NORTEM and MiMac. A brief description of the three facilities is provided on the next page, and further details are available online at <https://www.ntnu.edu/nano/infrastructure>

The aim of the call is to enable new academic collaborations between NTNU and leading nanoscience researchers across the world. The three facilities covered by the call provide exceptional infrastructure for nanoscale fabrication and characterisation, and offer the opportunity to carry out ground-breaking research. We are therefore looking for exciting and innovative proposals that push the boundaries of nanoscience. Applications should involve (at least) one PI from an external research institute with an internationally leading track-record in the area of the application and (at least) one PI from NTNU with complementary expertise.

While applications are welcomed in all areas of nanoscience, we are looking for proposals that make innovative use of the infrastructure available at NTNU. Your application should explain why NTNU is the right place to carry out the proposed research, and what specific equipment and techniques are needed to address the project goals. Distinctive aspects of the proposal should be highlighted. We are especially interested in knowledge-sharing projects that will allow the collaborating research groups to exchange and develop new research skills, and projects that will raise the general competence levels in the involved facilities. You should discuss your proposals with the Contact Point for the relevant infrastructure before writing an application. The available funding of up to ~200 kNOK per project should be sufficient to cover research visits of a few months' duration. Hence, it is important that projects are based on an established track-record in the area and that they are feasible to complete within the available time. Our expectation is that the projects will lead to both joint publications and joint funding applications for larger research collaborations. You should identify specific collaborative funding opportunities in your proposal.

Application Procedure

The Call will open on July 1st 2022 with a submission deadline of 23.59 on September 1st 2022. Applications must be submitted by an NTNU-based PI, using the online submission form available here: <https://tinyurl.com/ysa6mh7x>. A properly costed budget is mandatory, and access costs must be confirmed with the involved facility/facilities **before** submitting. Any queries about the application procedure should be submitted by email to: john.demello@ntnu.no or hanna.gautun@ntnu.no.

Funding decisions will be made on a competitive basis by a panel comprising members of the NTNU Nano advisory board and representatives from NTNU NanoLab, NORTEM and the Atom Probe Tomography Laboratory. We will prioritise applications that are: (i) based on a strong track record of internationally leading research, (ii) feasible to complete within the available time and resource, (iii) of strategic importance to NTNU and/or NTNU Nano; and (iv) likely to lead to joint funding applications between the partners. The panel's decision will be final, and no feedback will be given to unsuccessful applications. The outcome of the competition will be announced at the start of October 2022. Projects should be completed before July 2023.

All projects must comply with the regulations in force relating to the Control of the Export of Strategic Goods, Services and Technology. Prospective Visiting Researchers who might come into conflict with legislation

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governing exports of knowledge, technology and services will not be eligible for consideration. You should discuss this issue with the involved facility/facilities before selecting a Visiting Researcher.

Outward research visits

Please note, it is also possible to apply for support for outward research visits (i.e. for NTNU Nano researchers to visit research institutions outside of NTNU). Applications should be made via the NTNU Nano Impact fund: <https://www.ntnu.edu/nano/ntnu-nano-impact-fund>. To qualify for funding such visits should be of clear strategic value to NTNU and/or NTNU Nano. Please contact John de Mello to discuss before making an application.

Overview of the infrastructures

NTNU NanoLab is a 700 m² cleanroom, providing general purpose equipment for the fabrication and characterisation of complex systems on the micro- and nanoscale. The cleanroom is an open-access user-operated facility, managed by a staff of nine full-time engineers. As part of the “Norwegian Infrastructure for Micro-and Nanofabrication” (NorFab), NanoLab offers a wide range of equipment for thin-film deposition, wet and dry etching, focused ion milling (FIB), and optical and e-beam lithography for enabling patterning of features down to 1 µm and 6 nm, respectively. Two maskless aligners are available within the lab for rapid optical lithography. Characterisation equipment includes a scanning electrochemical microscope, a particle size analyser, absorption spectrometer, Atomic Force Microscopes (AFMs), a 3D profilometer, a contact angle measurement system, and three Scanning Electron Microscopes (SEMs). Please note, some projects based in NORTEM and MiMac may require limited access to NTNU NanoLab for nanoscale sample preparation via e.g. focussed ion-beam milling. Relevant access fees should be included in your budget. **Contact Person: Peter Kollensperger** (p.kollensperger@ntnu.no)

NORTEM is The Norwegian Centre for Transmission Electron Microscopy – a nationally coordinated initiative that makes state-of-the-art transmission electron microscopy (TEM) facilities available to Norwegian and international researchers. The Centre is co-located in Oslo and Trondheim, with the Trondheim activity being run by the TEM Gemini Centre – a research team specialising in TEM from the Department of Physics, the Department of Materials Science and Engineering and SINTEF Industry. The Trondheim node houses three advanced TEMs, with its flagship microscope – the Jeol JEM-ARM200F – being one of the best specified microscopes in Europe. **Contact Person: Randi Holmestad** (randi.holmestad@ntnu.no)

The Minerals and Materials Characterisation (MiMaC) is a collaboration between NTNU, SINTEF and the Geological Survey of Norway that provides a world class facility for the structural characterization and chemical analysis of minerals, metals and advanced nanomaterials. Key equipment includes: an Electron Probe Microanalyser (JEOL JXA-8530FPLUS), Field Emission Scanning Electron Microscope (Zeiss Sigma 300 VP) and two laser ablation instruments (Cetac G2). In addition, 3D imaging and chemical composition measurements at the atomic scale can be performed using a Cameca LEAP 5000-XS Atom Probe Tomography instrument. **Contact Person: Ida Westermann** (ida.westermann@ntnu.no)