



NICOLAUS COPERNICUS
UNIVERSITY
IN TORUŃ



Hosting offer for Marie Skłodowska-Curie Postdoctoral Fellowships (PF) 2022 at Nicolaus Copernicus University in Toruń/ Interdisciplinary Center for Modern Technologies

[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.

The **Interdisciplinary Center for Modern Technologies** at Nicolaus Copernicus University in Toruń 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

Our group within ICNT conducts fundamental and interdisciplinary research aimed at the search of new solutions for the clinical laboratory diagnostics and the production of novel therapeutic compounds and materials. The members of our group are involved in the development of new methodology based on LDI techniques for the *a. detection of potential biomarkers of diseases e.g. prostate cancer* and *b. differentiation of closely related bacterial strains, including the antibacterial resistant ones*. Moreover, our group is involved in the *production of new substances based on the metal ions and milk proteins* which potentially can be utilized as the dietary supplements or new antibacterial agents. Both applications includes the *synthesis and characterization of metal nanoparticles* as they revealed both the antibacterial properties and unique optical properties. Finally, the members of our group performs the investigations on the diatomic algae as a potential source of highly structured silica which is a unique adsorbent with potential utilization as the drug carrier in the wound dressing.

<https://icnt.umk.pl/>

Topics/expertise

If you are interested in the production of the **platforms based on the LDI techniques for the detection of low molecular molecules** (possible biomarkers of diseases or the bacterial metabolites) or in the **proteomics** and if you can accelerate one of the research lines listed below by bringing in your own specific expertise (e. g. the synthesis of nanoparticles and nanostructures, development of NALDI plates, proteomics, cell lines and bacterial cell models) we can look for an **innovative project application with a two-way transfer of knowledge in our group**.

Research topics within ICNT	
Topic	background
Metal and metal oxide nanoparticles synthesis	The synthesis of nanoparticles and the hybrid nanocomposites, their physicochemical and biological characterization as possible antibacterial agents

Synthesis of NALDI plates	The synthesis and characterization of NALDI plates based on chemical (sol-gel) and physicochemical synthesis (CVD and ALD), their characterization and utilization for the low molecular compounds studies such as lipids, sugars from plants and animal tissues as well as bacteria
Proteomics and metal-protein interactions	Milk proteins, their isolation and investigation. Synthesis and the study of the composites based on the milk proteins and the metals with the potential therapeutic effects (e. g. zinc, iron, silver). Study on their physicochemical and biological properties (MIC, toxicity on cell lines, promotion of metal absorption)
Identification and differentiation of closely related bacteria	The identification of the bacteria based on the protein profiling by MALDI-TOF, the differentiation of antibiotic resistant bacteria based on the PCR analysis as well as the activity of carbapenemases based on MALDI-TOF technique. The utilization of lipids profiling for the differentiation of bacteria. The utilization of NALDI plates for the differentiation of bacteria based on low molecular weight compounds.
Study of the diatomic algae	The study of the biomass of diatomic algae as a source of the polyunsaturated fatty acids and other biologically active substances. The study of the biosilica frustules as a potential adsorbent useful in the production of antibacterial nanocomposites based on silver nanoparticles and antibiotics.

Your profile

- Expected qualifications/expertise of the candidate: PhD in Sciences (Exact or Applied), Life Sciences or Medicine or equivalent
- 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 Poland 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 short mobility grant (2-5 days) to meet the potential supervisor and host group in Torun and to develop a solid fellowship application
- A stimulating, interdisciplinary environment for high-level research.

How to apply?

Indicate your interest by contacting the host institution as follows:

Please contact Paweł Pomastowski by e-mail (p.pomastowski@umk.pl) 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 Nicolaus Copernicus University: dn@umk.pl.