Institute of Medical Physics and Biophysics
University of Leipzig,
Härtelstraße 16/18, 04107 Leipzig, Germany

Position description: PhD studentship
Physicist/Chemist/Biochemist

Time frame: Duration of the project: 01.01.2023-31.12.2026

Tasks:
Research work in the EU Project HORIZON-CL4 2022 "Platform Optimisation to Enable Nanomaterial Safety Assessment for Rapid Commercialisation":
The work will focus on properties, behaviour and lifecycle of advanced nanomaterials (hybrid nano-carriers, graphene oxide and Q-dots) in complex matrices at sub-micron resolution.
The following issues will be addressed:

- optimization of methodological approaches for the investigation of advanced nanomaterials in biological and environmental fluids, their degradation, aggregation, persistence and biotransformation;
- development of 3D molecule based imaging technique for uptake quantification, monitoring intracellular translocation and trafficking of nanomaterials as well as their colocalisation and interaction with biomolecules in organs, tissues and cells down to the subcellular level..
- spectroscopic based diagnostic and prediction of adverse effects induced by advanced nanomaterials & drugs

A variety of imaging techniques, such as laser scanning confocal microscopy, confocal Raman microscopy and space resolved ion beam techniques will be used. ATR-FTIR, NTA, DLS, flow cytometry and AF4 coupled with UV, MALS, RI and CRM complement the imaging methods.

Requirements:
- master in biochemistry, chemistry, and physics or in a related programme;
  Interest in biophysics, experience in vibrational spectroscopy, fluorescence and ion beam techniques is desirable but not obligatory:
- readiness to become acquainted with cell physiology techniques.

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