Design Tomorrow's Materials: PhD Positions in Perovskite Nanoscience at LMU Munich

Are you passionate about cutting-edge nanoscience, excited by perovskite quantum dots, and ready to make a real impact in next-generation optoelectronics?

We are looking for curious, driven, and creative PhD students (m/f/d) with a background in physics, chemistry, nanoscience, or materials science to join our interdisciplinary teams at the Nano-Institute of the LMU Munich. You will explore perovskite nanomaterials from synthesis and spectroscopy to state-of-the-art electron microscopy and X-ray characterization, working at the forefront of fundamental science and device applications.

Available PhD projects

Urban Group

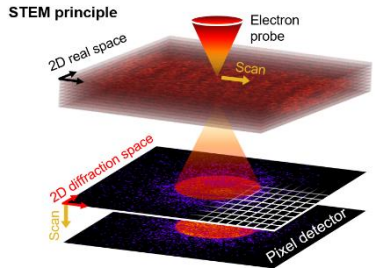
NC Synthesis & Spectroscopy

Design and synthesize new perovskite nanomaterials (quantum dots, nanoplatelets, and beyond) using innovative ligands and reaction strategies. Explore how subtle changes in size, shape, and surface chemistry affect optical properties, colloidal stability, and device performance.

Müller-Caspary Group

4D-STEM & Ptychography

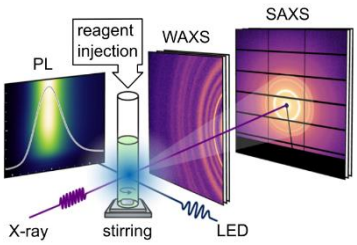
Use cutting-edge transmission electron microscopy (TEM) and advanced 4D-STEM techniques to probe atomic-scale structure and aging processes in perovskite nanostructures. Develop methods for low-dose imaging and push the boundaries of beam-sensitive materials characterization.



Nickel Group

X-ray Characterization

Develop and apply novel X-ray scattering methods to study perovskite nanomaterials. Contribute to instrumentation advances, including remote control and automation of experiments. Programming skills (e.g., Python) are an asset.



Who We Are Looking For

- A Master's degree in physics, chemistry, nanoscience, materials science, or a related field
- Excitement for experimental work and interdisciplinary problem-solving
- Relevant hands-on experience (synthetic chemistry, nanomaterials, microscopy, X-ray methods, or programming)
- Strong communication skills and the drive to work independently and in a team

Why Join Us?

- Work on **high-impact research** in one of Europe's top universities
- Collaborate across groups (Prof. Urban, PD Dr. Nickel, Prof. Müller-Caspary)
- Access world-class infrastructure (DESY, LMU Core Facilities, CeNS)
- Be part of a diverse, inclusive, and supportive scientific community
- Publish in top journals and attend international conferences
- Live in Munich, one of the most vibrant and livable cities in Europe

Position Details

- Start date: Flexible (preferred early 2026)
- Duration: 3 years (DFG-funded)

How to Apply

Please email the following documents (in a single PDF) to: sek.agnanospec@physikuni-muenchen.de

Subject line: PhD Application – Perovskite QDs

- A short motivation letter (What excites you? Why this project?)
- CV with relevant experience
- University transcripts (BSc + MSc)
- Names of 1–2 academic references

Müller-Caspary Urban Nickel

We welcome applicants from all backgrounds. Your curiosity and perspective matter.