PhD on the atomic-scale characterization of 2D materials using scanning probe microscopy

Institut für Physik der Kondensierten Materie, Erlangen, TV-L E 13, Teilzeit, Befristete Anstellung, Bewerbungsschluss: 25.07.2025

Your Tasks

We invite applications for a fully funded PhD position focused on the growth and atomic-scale investigation of ALD-grown 2D materials using high-resolution scanning probe microscopy.

The position is embedded within the DFG Collaborative Research Center SFB 1719

ChemPrint Next-generation printed semiconductors: Atomic engineering via molecular surface chemistry.

The project focuses on the structural and electronic properties of two-dimensional semiconductors grown by atomic layer deposition (ALD).

Investigations will be carried out under ultrahigh vacuum (UHV) at temperatures ranging from 5 K to room temperature, using low-temperature scanning tunneling microscopy (LT-STM) and non-contact atomic force microscopy (nc-AFM).

Key research topics include:

 Characterizing the band structure, surface morphology, and point defects in ALD-grown 2D semiconductors.

 Developing and applying molecular functionalization strategies to tune their electronic properties.

 Investigating the controlled formation of heterolayers and interfaces for potential device integration.

The PhD candidate will work in SPM group (Prof. S.Maier) in FAU's physics department in close collaboration with synthetic chemistry groups, who will provide custom-designed molecular building blocks for the 2D material growth, and with theoretical physics groups, who will support the interpretation of experimental data through computational modeling.

Your Profile

Necessary qualifications:

 Master's degree in physics, material sciences, nanosciences, physical chemistry or a related field.

 Strong interest in surface science, scanning probe microscopy, and UHV techniques; previous experience in these techniques is a benefit, but not mandatory.

 High motivation for interdisciplinary collaborations and a team player.

 Strong communication skills in English, both written and spoken; knowledge of German is not

mandatory.

Additional Information

Befristetes Forschungsvorhaben

We offer:

 Access to state-of-the-art infrastructure, including several low-temperature UHV STM/AFM systems and advanced surface preparation facilities.

 A dynamic, interdisciplinary research environment spanning surface physics, materials chemistry, and molecular nanoscience.

 Opportunities for collaboration across the ChemPrint consortium, participation in the structured ChemPrint Graduate Program, with opportunities for professional training, international travel, and collaborative research.

 The salary will be according to the German TV-L E13 (75%) for 3.5 years.

 The preferred starting date is September or October 2025, but this is negotiable.

How to apply:

 Cover letter describing your interest and relevant experience

 Curriculum vitae

 Academic transcripts and certificates

 Contact information for 1–2 academic referees

Interessiert?

Die vollständige Stellenausschreibung sowie alle Infos zum Bewerbungsverfahren finden Sie hier: