

The Leibniz Institute for Solid State and Materials Research Dresden e. V. (IFW Dresden) conducts modern materials research on a scientific basis for the development of new and sustainable materials and technologies. The institute employs an average of 500 people from over 40 nations and, in addition to its scientific tasks, is dedicated to promoting young scientists and engineers. Further information at: <http://www.ifw-dresden.de>

The Institute for Metallic Materials (Prof. K. Nielsch) of the IFW Dresden offers a

## PhD position (m/f/d)

on the following topic:

### Low-Temperature Atomic Layer Deposition of Unconventional 2D materials

on a part-time basis with a weekly working time of 30 hours.

2D materials are very promising for future electronic devices, nanosensors and energy conversion applications. In this PhD thesis unconventional 2D materials with outstanding electronic properties will be developed by means of Atomic Layer Deposition (ALD), which is based on a surface limited and well-defined chemical reaction at low temperatures. This enables the film growth of ideal stoichiometry and conformal growth on 3D surfaces. Classical 2D materials like MoS<sub>2</sub> und WS<sub>2</sub> show limited charge carrier mobility. Therefore, this PhD thesis will focus on the growth of topological insulators and non-van der Waals 2D materials, which will be selected based on band structure calculations. This PhD project is embedded in the CRC/SFB 1415 on Chemistry of Synthetic 2D materials and its graduate school. Further details on this Ph.D. projects:

- Build-up of an ALD reactor for the film growth of novel compounds below 100 °C
- Development of ALD processes for semiconducting 2D materials based on established ALD pre-cursors
- Structural and electrical characterization of the novel 2D materials and comparison with band structure calculations
- In the advanced stage the growth of organic/inorganic hybrid films might be targeted for flexible electronics by means of molecular layer deposition (MLD).

We are seeking highly motivated applicants (m/f/d) with a university degree (Master / Diploma) with a background in chemistry or physics, materials science, mechanical engineering, or a relevant subject, who are interested in interdisciplinary research, like to be involved in the ALD community and creatively contribute their own ideas. We are looking for a candidate (m/f/d) with pronounced initiative, creativity, ability to work effectively in a team, as well as fluency of written and spoken English.

The project duration is limited to 3 years, starting on October 1, 2023. A research stay abroad of maximum 6 months is supported and strongly recommended. Remuneration is based on the TV-L (EG 13, 75 %). The first contract is limited to 1 year, an extension for another 2 years is possible. Doctoral students (m/f/d) are facilitated to participate in the doctoral program in order to successfully complete their dissertation. We offer an attractive workplace with excellent facilities and surroundings in Dresden.

IFW Dresden strives for a balanced gender ratio in all areas. In science, IFW Dresden would like to increase the proportion of women and therefore explicitly invites suitably qualified female scientists to apply. The application of severely disabled persons is explicitly welcome.

Application including a CV, a motivation letter describing the research career goals, skills and experience, copies of all certificates should be sent citing the reference number **027-23-2001** no later than **June 12th, 2023** online as a single pdf-file to:

[bewerbung@ifw-dresden.de](mailto:bewerbung@ifw-dresden.de).

For further information, please contact: Prof. Kornelius Nielsch ([k.nielsch@ifw-dresden.de](mailto:k.nielsch@ifw-dresden.de)).

