

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

Doctoral Researcher Position (m/f/d)

Controlling proximity effects in ferromagnetic-superconducting cuprate van der Waals hetero-structures

on a part-time basis with a weekly working time of 26 hours, starting from October 2023.

Project description:

The Van der Waals (VdW) heterostructures formed by mechanically stacking layers of 2-Dimensional (2D) materials possess unique properties and new functionalities, not seen in standard materials, that make them irreplaceable platform for emergent electronics. Hindering the progress in utilizing VdW uniqueness is the fact that many of their features, especially the novel topological quantum states and related phenomena are restricted to low temperatures. Employing High Temperature Superconductors (HTSCs) based 2D films for manufacturing VdW heterostructures offers the most advantageous route to increase the temperature range in which proximity effect with ferromagnets can be studied. Realizing this daunting task requires the understanding of microscopic mechanisms underlying their properties as well as the development of technologies for their engineering and manipulation. Utilizing solvent- and polymer-free nanofabrication advances, our group is now equipped to meet this challenge. The PhD candidate research goal will be to develop experimental methodologies and a theoretical understanding of novel hybrid superconducting and topological devices at high temperatures. The student will therefore learn advanced nanofabrication techniques and quantum electronic transport techniques in one of the leading lab in the world able to realize these heterostructures.

Your profile:

We are seeking for a highly motivated and team-oriented student (m/f/d), who holds a Master degree in physics, nanoscience. Basic knowledge in nanofabrication and condensed matter physics is welcome. The successful candidate (m/f/d) is enthusiast about fundamental science, highly ambitious and able to establish collaborations. Good communication skills in written and spoken English are required.

Conditions:

Remuneration is based on the TV-L (EG 13, 65 %). 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 **032-23-2107** no later than **July 31th, 2023** online as a single pdf-file to:

bewerbung@ifw-dresden.de.

For further information, please contact: Dr. Nicola Poccia (n.poccia@ifw-dresden.de).
Research group website: <https://superpuddles-lab.ifw-dresden.de/>

