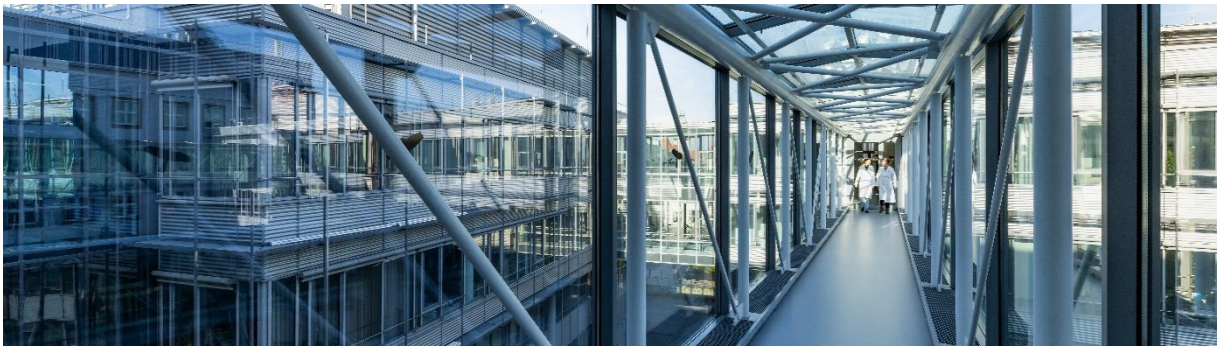
Leibniz Institute for Solid State and Materials Research Dresden

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 Materials Chemistry (Director: Prof. Dr. Anjana Devi) at the IFW Dresden, Germany, offers a

Postdoctoral position (m/f/div)

on the topic:

AI-guided Molecular Design of Atomic Layer Deposition Precursors and Process Development

Recent advances in artificial intelligence (AI) and machine learning (ML) have opened up a wealth of new possibilities in atomic layer deposition (ALD). AI/ML tools are currently used not only to speed up and improve ALD process optimization but also to open new avenues for developing innovative ALD precursors and processes that might otherwise remain unexplored. Emerging AI/ML methodologies, such as generative AI and large language models (LLMs), remain underutilized in the ALD research field for predicting molecular representations of metal-ligand structures, providing chemical insights into AI workflows, and generating reliable, diverse datasets for developing new ALD precursors. These data-driven approaches are valuable for predicting outcomes, guiding experimental design, and enabling faster progress in the molecular design and development of ALD precursors and processes.

Main Tasks:

- AI-guided ligand synthesis and precursor development for ALD processing.
- Characterization of ALD precursors by spectroscopic and spectrometric methods
- Implementation of AI/ML-generated data input and theoretical predictions for synthesizing new ligands and new ALD precursors.
- Interactive collaboration with the theoretical group (AI/ML), interpretation of experimental data, and guidance for the synthesis of novel precursors through prediction of molecular properties.
- Validating new precursors for ALD process development

Profile:

Within the framework of an industry collaboration project, we are seeking highly motivated candidates (m/f/div) with a PhD in inorganic, organic, or materials chemistry, or in chemical engineering, who are interested in conducting interdisciplinary research.
Expertise in synthesizing and characterizing organometallic compounds, along with hands-on experience analyzing air-sensitive organometallic compounds using spectroscopic and spectrometric methods, is essential. Excellent skills in presenting scientific results, fluency in written and spoken English, and a strong ability to survey, analyze, and assess the scientific literature are required. Experience with theoretical approaches using AI/ML tools to predict ALD precursor properties is desired. Good knowledge of material fabrication by ALD and thin-film materials characterization is an added advantage. As a project lead, the ability to coordinate with industry collaborators to successfully deliver project milestones is required. We aim to recruit candidates with strong initiative, creativity, and the ability to work effectively within a team of international researchers with backgrounds in inorganic chemistry, materials chemistry, theoretical modeling, materials science, and engineering.

What we offer:

- Employment in accordance with the collective agreement for the public service of the federal states (TV-L),
- A modern, well-equipped workplace on the campus of the Technische Universität Dresden,
- Flexible, family-friendly working hours,
- 30 days' vacation,
- Company pension scheme (VBL),
- Benefits for job ticket/Germany ticket,
- Special annual payment,
- Capital-forming benefits,
- Cooperation agreements with daycare centers to help with childcare shortages,
- Company health management (back training, health day with various offers),
- Discounted sports offer from the Dresden University Sports Center,
- Job-related further training opportunities and language courses,
- Company restaurant with a variety of breakfast and lunch dishes.

The contract of employment, including remuneration, is based on the collective bargaining law for the public service of the federal states, TV-L EG 13 scale with full-time working hours (part-time is possible). The initial appointment is for one year, with the possibility of an additional year. The expected start date is **01.07.2026**.

In line with our commitment to diversity, we encourage qualified women to apply, as we aim to increase female representation in the field of science. Applications from people with severe disabilities and those treated as such within the meaning of Section 2(3) of SGB IX are expressly encouraged. Proof of this status must be included with the application documents.

Please send your application with informative documents (letter of motivation, which describes the research career goals, CV, relevant transcripts, training certificates, and contact details for at least two professional references) exclusively in electronic form and in a PDF file (other formats will not be considered), citing the reference number **036-26-3040**, no later than **31.05.2026**.

bewerbung@ifw-dresden.de

If you have further questions about the position, please contact Prof. Dr. Anjana Devi or Dr. Harish Parala (office-imc@ifw-dresden.de).