TUD Dresden University of Technology, as a University of Excellence, is one of the leading and most dynamic research institutions in the country. Founded in 1828, today it is a globally oriented, regionally anchored top university as it focuses on the grand challenges of the 21st century. It develops innovative solutions for the world’s most pressing issues. In research and academic programs, the university unites the natural and engineering sciences with the humanities, social sciences and medicine. This wide range of disciplines is a special feature, facilitating interdisciplinarity and transfer of science to society. As a modern employer, it offers attractive working conditions to all employees in teaching, research, technology and administration. The goal is to promote and develop their individual abilities while empowering everyone to reach their full potential. TUD embodies a university culture that is characterized by cosmopolitanism, mutual appreciation, thriving innovation and active participation. For TUD diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.

At the Faculty of Mathematics, Institute of Scientific Computing, within the Dresden Center of Computational Materials Science (DCMS), the interdisciplinary research group Mesoscale Material Modeling and Simulation offers a position as

**Research Associate / PhD Student (m/f/x)**

(subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

starting as soon as possible. The position is limited until November 30, 2026 with the option of extension. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz - WissZeitVG). The position offers the chance to obtain further academic qualification (usually PhD). Balancing family and career is an important issue. The position is generally suitable for candidates seeking part-time employment. Please indicate your request in your application.

The position is embedded in the activities of the Mesoscale Material Modeling and Simulation group headed by Dr. Marco Salvalaglio. It is funded by DFG projects dealing with mesoscale modeling of crystalline systems. Core activities include the development and application of state-of-the-art phase-field (PF) and phase-field crystal (PFC) models with the following goals: 1. Providing novel theoretical tools that bridge the gap between microscopic and macroscopic features while studying crystals considering real material properties. 2. Overcoming the limitations of current state-of-the-art theoretical approaches in this field through novel, hybrid and data-driven approaches. 3. Enabling applications to technology-relevant crystalline systems and related open problems in materials science. 4. Extending modeling approaches to systems beyond crystals.

Collaboration with internationally renowned researchers in the field is planned. Exchange programmes and short research stays abroad can be organized and are encouraged. Within the framework of the DCMS, you will also have the opportunity to choose the main topic for your doctorate (provided it is compatible with the topic). The work will primarily be based at the Institute for Scientific Computing at TUD Dresden University of Technology.

**Tasks:** You will develop phase-field and phase-field-crystal models to study crystal properties (and complementary methods for selected comparisons); you will investigate mechanical properties of bulk crystals and thin crystalline films; you will analyze data and make quantitative comparisons with experiments; you will implement models in computer codes for numerical simulations; you will carry out numerical studies, including on HPC facilities. Further specific tasks can be tailored to your interests.
**Requirements:** 1. university degree (Master) in mathematics, physics, materials science or related subjects. 2. basic knowledge of computer programming (e.g. Python, Matlab and C++). 3. excellent knowledge of the English language. 4. high problem-solving ability, motivation/interest in scientific research, willingness to learn and work in a group. 5. Previous experience with numerical methods/simulations, state-of-the-art computational techniques (e.g. data-driven methods and/or FEM) and/or theoretical material modeling will be given preference.

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university and offers a Dual Career Service. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

Please submit your detailed application with the usual documents (including motivation letter, CV, letter of recommendation and university certificates, i.e. list of academic achievements with grades) by **July 18, 2024** (stamped arrival date of the university central mail service or the time stamp on the email server of TUD applies), preferably via the SecureMail portal of the TUD [https://securemail.tu-dresden.de](https://securemail.tu-dresden.de) by sending it as a single pdf file to marco.salvalaglio@tu-dresden.de or to: **TU Dresden, Fakultät Mathematik, Institut für Wissenschaftliches Rechnen, z. Hd. Herrn Dr. Marco Salvalaglio, Helmholtzstr. 10, 01069 Dresden, Germany.** Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

**Reference to data protection:** Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: [https://tu-dresden.de/karriere/datenschutzhinweis](https://tu-dresden.de/karriere/datenschutzhinweis).