

# PhD position for Process Simulation

(m/f/d)

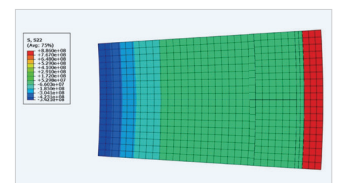
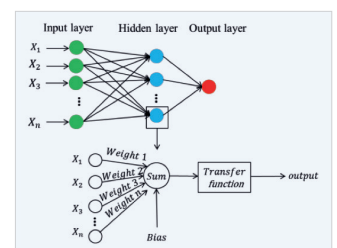


## Company description

K1-MET is one of the leading and internationally renowned metallurgical competence centres for ferrous and nonferrous metallurgy in Austria working on research issues such as energy efficiency, circular economy, and climate neutral metal production, as well as digitalization potential of the metal-producing sector. The basis for a fruitful development of K1-MET is the well-established cooperation with our partners from industry and academia. Our main sites are in Linz and Leoben, Austria, in close proximity to the most important locations of the Austrian metal industry. Together, we are working on process solutions to advance the modernization of the European metallurgical industry, driving forward the development and application of advanced future technologies from fundamental research towards industrial implementation.

## Description of position and tasks

You will be working on the development of ground-breaking simulations of industrial processes of iron- and steelmaking and their validation. The doctoral thesis will be carried out at the Montanuniversität Leoben (MUL) and supervised by the Chair of Ceramics (CoC). The PhD research will deal with **thermomechanical modelling of the lining material of an industrial metallurgical vessel**. Finite element methods with material models for irreversible behaviour will be applied to an industrial use case. The aims are the development of a numerical methodology to speed up finite element simulations of vessel lining systems considering process cycles as well as an improvement of the prediction accuracy. You will work on numerical modelling for lining optimisation and develop material constitutive models. A framework combining advanced machine learning techniques and finite element modelling shall be also established. You will be integrated into a professional team which includes academic and industrial partners in national research projects of K1-MET and MUL. With your work you will contribute to an enhanced process understanding and the achievement of new and innovative results in the steel industry.



## Competences and experiences

We are looking for the following competences and experiences:

- Full academic qualification (Diploma / Master) of a technical or natural scientific discipline (Material Science, Ceramics, Computational Solid Mechanics, or other related fields)
- Experience in modelling, simulation, and programming (e.g., Abaqus, Python, Fortran)
- Knowledge about machine learning techniques and their applications desirable
- Social competences, accessible personality with the ability to solve problems constructively
- Good presentation skills and autonomous time management desirable
- Proficiency in English language obligatory, proficiency in German language advantageous

Start of employment: July 2023  
 Duration of employment: limited to 4 years  
 Type of employment: Full time (38.5 h / week), flexible working hours  
 Employer: K1-MET GmbH, [www.k1-met.com](http://www.k1-met.com)  
 Place of work: Leoben, Styria, Austria  
 Compensation: The gross salary for this PhD position with a Diploma / Master's degree is € 3.400 (14 x p.a., full time according to the collective labour agreement of mining and iron-producing industries).

Does this position sound interesting to you? Then feel free to send your CV, a motivation letter, and references to [office@k1-met.com](mailto:office@k1-met.com), using "PhD position – SUPLOAD" as the subject of your email. The position is open starting right away until a suitable candidate is found. International applications are encouraged.

### Employer

K1-MET GmbH  
[office@k1-met.com](mailto:office@k1-met.com)  
[www.k1-met.com](http://www.k1-met.com)

### K1-MET Head office

Stahlstrasse 14  
 4020 Linz  
 Austria

### Contact K1-MET

DI Dr. Christine Gruber  
 Management Area Simulation  
 & Data Analyses

### Contact MUL CoC

Priv.-Doz. Dr.mont Shengli Jin, Ph.D.  
 Chair of Ceramics  
<https://coc.unileoben.ac.at>