Mitteilungsblatt

der Montanuniversität Leoben

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163. Job Advertisement - One vacant position for a full-time Project Researcher (m/f/d) at the Chair of Nonferrous Metallurgy, in the Department of Metallurgy - Reference ID: 2401WPE

One vacant position for a full-time Project Researcher (m/f/d) at the Chair of Nonferrous Metallurgy, in the Department of Metallurgy - Start from the earliest possible date in an employment contract limited to three year. Salary Group B1 according to the Uni-KV, monthly minimum salary excl. Szlg.: € 3.578,80 for 40 hours per week (14 x per year), actual classification is according to previous relevant experience

In order to counteract the progression of climate change and its effects on the ecosystem, it is necessary to minimise CO_2 emissions by further developing the energy system. The pyrolysis of methane is considered an important bridging technology until a CO_2-free energy concept is achieved. The development of efficient liquid metal catalysts is a focus of research activities at the Chair of Nonferrous Metallurgy at the Montanuniversität Leoben. In addition to hydrogen, considerable quantities of solid carbon are also produced that can be utilised in agriculture or building materials, for example. To achieve the necessary quality, a new research focus is being set on characterisation, purification and utilisation.

Your tasks:

- Characterisation of carbon from methane pyrolysis and development of processes to maximise quality
- Evaluation of process combinations for the recovery of metals
- Evaluation of utilisation options for the carbon
- Contributing to the process and plant optimisation for the pyrolysis process (pilot plant currently under construction)

What you bring:

- Completed studies in metallurgy, process engineering, chemistry or a comparable field (master's degree or diploma in engineering)
- Ability to work in a team, interdisciplinary way of thinking, self-motivation and reliability

What we offer:

- Full-time position over three years with the option of a doctorate
- Practice-orientated working environment with close contact to industry
- Freedom to develop and shape the new research focus
- Full access to all services offered by the Montanuniversität, for example the University Sports Institute

Reference ID: 2401WPE
End of Application: 05.04.2024

The Montanuniversitaet Leoben intends to increase the number of women on its faculty and therefore specifically invites applications by women. Among equally qualified applicants, women will receive preferential consideration.

For the application please use the online form on the homepage: http://www.unileoben.ac.at/jobs

164. Job Advertisement - One vacant position for a full-time university assistant (m/f/d) at the Chair of Simulation and Modelling of Metallurgical Processes at the Department Metallurgy - Reference ID: 2402WPL

One vacant position for a full-time university assistant (m/f/d) at the Chair of Simulation and Modelling of Metallurgical Processes at the Department Metallurgy. Start from probably 01.04.2024 in an employment contract limited to four year. Salary Group B1 according to the Uni-KV, monthly minimum salary excl. Szlg.: € 3.578,80 for 40 hours per week (14 x per year), actual classification is according to previous relevant experience.

Research subject:
High benefit and innovative semiconductors and oxides bulk crystals are elaborated from methods such as Czochralski, Bridgman, EFG, HEM…. These techniques are widespread for many kinds of single crystals but they generally suffer from the very same disadvantage: the presence of a hot, polluting and consumable crucible. In order to improve and optimize industrial processes, weaknesses of using disposable containers should be addressed. The economic impact is strong. High purity silica crucibles used for silicon crystallization can only be used once, due to irreversible damages. Likewise, noble (Iridium or Platinum) and refractory metal containers used for oxide processing have a strong impact on the final cost (the price of Ir increased from 40€/g to 200€/g until 2020). All crucibles severely affect the cost of the devices and equipment derived from the crystals, such as PV cells, scintillators, lasers, etc… The impact on the crystal purity, and then on the final device performance, is tremendous, as pollution by major constituents of the crucible and of the coating is unavoidable with today crystallization techniques. In order to solve all these difficulties, a new crystal growth technique, involving the containment of the molten material in a re-usable electromagnetic cold crucible, has been proposed. However, the high frequency electromagnetic forces generate strong turbulence in the melt, detrimental to the stability of the crystal growth. In order to damp this turbulent flow, a stationary magnetic field is simultaneously applied. The interaction of the alternative and stationary magnetic fields with the molten material introduces challenges in the Magneto-Hydro-Dynamic (MHD) behavior of the melt and in the stability of the crystal growth process. Scientific and technological challenges Interesting scientific and technological challenges rise from the use of cold crucibles in the purpose to grow single crystals, especially to tune electromagnetic system for stable crystal pulling. So far, single crystal pulling from a cold crucible appears to have been poorly investigated. However, the feasibility of pulling a dislocation free Si single crystal was demonstrated, though at a small laboratory scale. Objectives of the PhD thesis concern the theoretical and applied analysis of these challenges:

- Advanced MHD numerical modelling will be used to analyze the effect, on the molten material fluid flow, of superposition of a static magnetic field on the alternative electromagnetic field.
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- Advanced numerical modeling of the crystal growth process will be used to investigate temperature gradients, interface shape and eventually growth instabilities.
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- This numerical modeling activity will be put in perspective with the results of the crystallization of selected model materials (silicon, sapphire).

Requirements:
- The candidate should have a master's or engineering degree in physics or process engineering with a specialization in numerical modeling techniques.
- Fluency in English is mandatory.

Reference ID: 2402WPL
End of Application: 05.04.2024

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165. Job Advertisement - One vacant position for a full-time university assistant (m/f/d) at the Chair of Applied Geophysics, in the Department Applied Geosciences and Geophysics - Reference ID: 2403WPA

One vacant position for a full-time university assistant (m/f/d) at the Chair of Applied Geophysics, in the Department Applied Geosciences and Geophysics. Start from June 2024 in an employment contract limited to four year. Salary Group B1 according to the Uni-KV, monthly minimum salary excl. Szlg.: € 3.578,80 for 40 hours per week (14 x per year), actual classification is according to previous relevant experience.

Field of activity:
The candidate is expected to develop and apply pattern recognition algorithms to detect, and to image, stationary noise sources from passive seismic data.

Requirements:
The candidate must have a Master degree in geophysics, or in a related discipline, and the desire to obtain a PhD degree.

Desired qualifications:
The candidate must have experience in Python coding, preferably also with Obspy.

Additional qualifications:
The successful candidate will have a background in seismology and the processing of seismograms.
Basic knowledge of the development and application of AI algorithms is an advantage.

Reference ID: 2403WPA
End of Application: 05.04.2024

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For the application please use the online form on the homepage: http://www.unileoben.ac.at/jobs

Der Rektor:
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