Preliminary information. See KTH's Job Vacancies Website for any official announcement, which will also provide a link to the application portal, and other relevant information.

Title: Postdoc in transmission electron microscopy characterization of sustainable metals

Job description

At the Hultgren Laboratory at the Department of Materials Science and Engineering we are seeking a postdoctoral researcher with research interest in microstructural characterization of sustainable metallic materials using transmission electron microscopy and supplementary tools.

Through the generous grant of Wallenberg Initiative Materials Science for Sustainability – WISE (https://wise-materials.org) and KTH we are now establishing a state-of-the-art high-throughput scanning transmission electron microscope (STEM) with unique in-situ/-operando capability at the Hultgren Laboratory. The equipment adds unique capability in the Swedish infrastructure for transmission electron microscopy – ARTEMI (https://artemi.se/) with an integrated laser heating system which enables high-temperature studies as well as in-situ thermo-mechanical processing studies with the help of an in-situ straining holder. It will also be possible to combine other types of in-situ holders, e.g. reaction chambers, in combination with the laser heating. Furthermore, the system will be equipped with Automated Crystallographic Orientation mapping (ACOM), providing unique high-throughput, high resolution localized crystallographic and strain analysis.

The postdoctoral researcher will join our research team in materials characterization to perform research towards enhanced materials sustainability. By providing improved fundamental understanding of metallic materials' structure-property correlations by advanced characterization we support development of novel metallic materials and their processes. For example, we work on improving metallic materials used in the electrification of the automotive industry, hydrogen-tolerant metallic materials that are required for the transition to a fossil-free energy system with hydrogen as an important energy carrier, and the design of metallic and composite materials that are better suited for production from recycled materials while maintaining high performance. So-called in-situ/in-operando and high-throughput measurements are important in this project and the postdoc will work on both method development as well as materials science applications, i.e. better understanding of the microstructure and mechanical properties of specific metallic and composite materials.

The postdoc position should be interesting for researchers in materials science with an established TEM characterization profile and the desire to further develop their transmission electron microscopy competence and expand their capacity in the field of physical and mechanical metallurgy and material characterization. Furthermore, the postdoctoral fellow will have an excellent opportunity to collaborate closely with academic and industrial partners in Sweden and internationally towards enhanced materials sustainability.

What we offer

- A position at a leading technical university that generates knowledge and skills for a sustainable future.
- Engaged and ambitious colleagues along with a creative, international and dynamic working environment
- Work in Stockholm, in close proximity to nature
- Help to relocate and be settled in Sweden and at KTH.
- An opportunity and support to develop expertise via access to a broad range of advanced materials characterization instruments at Hultgren laboratory.

Read more about what it is like to work at KTH

Qualifications

Requirements

- A doctoral degree or an equivalent foreign degree in materials science, materials physics, materials characterization, or closely-related area for the proposed research. This eligibility requirement must be met no later than the time the employment decision is made.
- Demonstrated experience in TEM characterization of metallic materials, including specimen preparation, data acquisition, and analysis.
- The ability to express yourself very well in English, spoken and written, as this will be required in day-to-day work.
- You are self-motivated with a strong ability to take initiative and run projects.

Preferred qualifications

- A doctoral degree or an equivalent foreign degree, obtained within the last three years prior to the application deadline.
- Experience with ACOM and in-situ experiments
- Experience with complementary characterization techniques (e.g., FIB-SEM, APT).
- Background in physical metallurgy and solid-state phase transformations.

Great emphasis will be placed on personal skills.
As a person, you have well-developed analytical and problem-solving skills and like to take responsibility. You have strong collaboration skills including the ability to lead and to support research.

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