

Job Offer in Rapid Solidification of Steels

Background

The Spanish National Center for Research in Metals ([CENIM-CSIC](#)) develops its research activities in the field of metallic alloys, from the design, production and transformation until the analysis of the final use in the different industrial sectors. The profile of CENIM-CSIC, the largest Spanish research centre in metallurgy, branches in basic and applied research and technological cooperation with industry, focusing on physical metallurgy, microstructural and mechanical characterization. Among facilities available at CENIM-CSIC, thermo mechanical simulators, high-resolution dilatometry, optical and electron microscopes (FEG-SEM-EDX-EBSD and TEM), X-ray diffractometer, thermoelectric power measurement, mechanical testing laboratory, and software for thermodynamic calculations can be highlighted.

Currently, the development of new alloys for rapid solidification processes, such as Selective Laser Melting (SLM) is in full expansion. SLM is an Additive Manufacturing (AM) technology that converts a powder bed into a solidified component with complex geometry through a local melting and rapid solidification process upon irradiation of the powder with a laser source. Inherently, often metastable, supersaturated and non-equilibrium phases are present in rapidly solidified metals, opening new processing capabilities and often resulting in a set of unique material properties. Therefore, this project is a joint adventure with mechanical and materials engineers within Arcelormittal Innovación Investigación e Inversión S.L.

In this framework, we can offer an open and innovative research environment to start a science career.

Responsibilities

This job opening covers a research position (initially 1 year with possible extension upon positive evaluation) at the Solid - Solid Phase Transformations in Steels Group ([Materialia group](#)) of CENIM-CSIC for a graduate student in the frame of a project on characterising steels manufactured for additive manufacturing. You will work with advanced characterization (electron microscopy including SEM, TEM, EBSD, X-ray diffraction for phase, stress and texture analysis, DSC, dilatometry, ...) and mechanical testing (strength, fatigue, indentation techniques, ...) equipment.

Your main responsibilities comprise:

- build up expertise in microstructural characterization of new steel grades
- acting as a spokesperson to the industrial partner for metal alloy characterisation for SLM

Profile

For the current position, we are looking for a physicist, chemist or engineer specialist in Materials in a field related to metal alloy processing and characterization. Knowledge and/or proven experimental experience with steel metallurgy will be positively considered.

Experience with selective laser melting is a plus.

Your main responsibilities comprise:

1. Experimental study of phase transformations in newly developed steel grades, including detailed microstructural (crystallographic phases and texture) characterization
2. Powder characterization for powder bed fusion additive manufacturing processes (selective laser melting), including flow behaviour, optical properties and microstructural characterization
3. Subsequent microstructural and mechanical characterization of Selective laser melting (SLM) of new steel grades (tool steels, stainless steel)

Offer

We offer:

1. A one year contract, with possible extension of 1 year according to "Personal Técnico Titulado Superior mediante contrato de trabajo en practicas" of the [Bolsa de Trabajo del CSIC](#).
2. A stimulating research environment with extensive expertise in physical metallurgy and additive manufacturing
3. An excellent mix of fundamental science and industrially relevant research in close collaboration with a leading company within the steel sector such as Arcelormittal
4. A good life-work balance

Interested?

For more information please contact Dr. Carlos Capdevila, tel.: +34 5538900, mail: ccm@cenim.csic.es. You can apply for this job no later than September 28, 2018 via email.