NTNU, NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Faculty of Natural Sciences and Technology - Department of Materials Science and Engineering

PhD POSITION ON SCREW EXTRUSION OF RECYCLED MATERIALS

About the position

A PhD fellowship on screw extrusion of recycled materials within the frame of the SFI PhysMet (Centre for Sustainable and Competitive Metallurgical and Manufacturing Industry; https://www.ntnu.edu/physmet) is offered at the Department of Materials Science and Engineering. The position is linked to *Research Activity (RA) 3-Sustainable and high performance material development*.

The novel Screw extrusion (SE) process represents huge potential in physical metallurgy. In principle this is a continuous extrusion process where granules of the material to be extruded are fed into one end of the extruder and a solid profile comes out in the other end. So far it has mainly been used for aluminium, but it may also be used for other metals. As the feedstock is granular, the technology offers a lot of new opportunities, some of which are: i) direct extrusion of scrap into new products; ii) develop new alloys based on mechanical mixtures of granules of different Al alloys or mixtures of different metals/materials; iii) Screw extrusion of rapidly solidified materials (ribbons, powder, needles) into products or semi-products. The work will include experimental trials in terms of material design, process parameter study, characterisation of microstructures and evaluation of properties.

Required selection criteria

- Your education must correspond to a five-year Norwegian degree program in Materials Science and Engineering, Physics, Materials Chemistry, Mechanical Engineering or equivalent, where 120 credits are obtained at master's level.
- You must have a strong academic background from your previous studies and an average grade from the master's degree program, or equivalent education, which is equal to B or better compared with NTNU's grading scale. If you do not have letter grades from previous studies, you must have an equally good academic basis. If you have a weaker grade background, you may be assessed if you can document that you are particularly suitable for a PhD education.
- You must meet the requirements for admission to the Faculty of Natural Sciences doctoral program https://www.ntnu.edu/nv/phd
- You must have good written and oral English language and communication skills. Knowledge of a Scandinavian language is considered as a plus.

Preferred selection criteria

The relevant candidates should have an educational background which preferably includes hands-on experience with methods for materials processing and mechanical testing as well as with various advanced nano-/microstructure characterization and analysis techniques (e.g. SEM, TEM, APT). Candidates with background on powder metallurgy and/or solidification may also apply.

Salary and conditions

PhD candidates are remunerated in code 1017 and are normally remunerated at gross from NOK 491 200 per annum before tax, depending on qualifications and seniority. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 3 years (which can be extended to 4 years with teaching duties). Appointment to a PhD position requires that you are admitted to the PhD programme in Materials Science https://www.ntnu.edu/nv/phd within three months of employment, and that you participate in an organized PhD program during the employment period.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants, and the acts relating to Control of the Export of Strategic Goods, Services and Technology. Candidates who by assessment of the application and attachment are seen to conflict with the criteria in the latter law will be prohibited from recruitment to NTNU. After the appointment you must assume that there may be changes in the area of work.

It is a prerequisite you can be present at and accessible to the institution on a daily basis.

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal and interpersonal qualities. Motivation, ambitions, and potential will also count in the assessment of the candidates.

NTNU is committed to following evaluation criteria for research quality according to The San Francisco Declaration on Research Assessment -DORA.

General information

NTNU is a broad-based university with a technical-scientific profile and a focus in professional education. The university is located in three cities with headquarters in Trondheim. At NTNU, 9,000 employees and 42,000 students work to create knowledge for a better world. You can find more information about working at NTNU and the application process here.
Video: https://youtu.be/Xt-yHCN5QS0

Working at NTNU
A good work environment is characterized by diversity. We encourage qualified candidates to apply, regardless of their gender, functional capacity or cultural background.

The city of Trondheim is a modern European city with a rich cultural scene. Trondheim is the innovation capital of Norway with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.
As an employee at NTNU, you must at all times adhere to the changes that the development in the subject entails and the organizational changes that are adopted.

If you are interested in the position or have any questions, please contact Professor Marisa Di Sabatino Lundberg, telephone 98243462, email marisa.di.sabatino@ntnu.no, or Professor Knut Marthinsen, telephone 41513972, email knut.marthinsen@ntnu.no.