Norwegian University of Life Sciences

Jobbnorge ID: 202865
Deadline: 4/11/2021
Website: http://www.nmbu.no
Scope: Fulltime
Duration: Fixed Term

Are you interested in developing safe sites for long-term storage of waste in the circular economy?

PhD position within Site Characterization for Waste Management

About the position

Faculty of Environmental Sciences and Natural Resource Management (MINA) at Norwegian University of Life Sciences (NMBU) has a vacant 3-year PhD position on Integrated Multi-Disciplinary 3D Site Characterization for Landfill Development. The PhD work will be an integral part of the Research-Based Innovation Centre earthresQue www.earthresque.com funded by the Research Council of Norway (2020-2028).

Today, new landfills are constructed edifices designed to be stable and environmentally safe for hundreds of years. As such, landfills are fully integrated into the environment, and should be built on the most suitable sites to maximize the long-term protection of the environment and ease of operations. However, current practices for establishing new landfills in Norway are highly variable, and hence there is a need to establish national criteria and regulations. National geological criteria based on best practices are important for operators to build their development plans, prevent uninformed and opaque decisions by politicians and local authorities who give permits, and to gain the trust of communities. The aim of the project is to define the national geological criteria to select the best possible sites for landfill development by developing a workflow on how to generate integrated multi-disciplinary 3D digital twin model of sites selected for landfill development.

The outcome of this study will be an integrated 3D model of the environment conditions external to the landfill, such as the distribution of natural geological barriers and hydrological system. This model will be used to optimize the development plans (need for artificial barriers) and programs for environmental monitoring. The model will form the basis of a Deposit Information Modeling (DIM - similar to BIM - Building Information Model), the latter being used to ensure traceability of landfilled materials for potential future extraction of mineral resources from waste. The results of the project can also be used by partners to raise public confidence and acceptance in waste management.

The PhD student will work in close collaboration with hydrogeologists, geologists, geophysicists from NMBU, IFE, NGI and NIBIO and with industry partners.

The starting date for the positions will ideally be June 1, 2021, but for the right candidate, both earlier and later starts may be negotiable.

Main tasks

The main tasks of the PhD will be:

- Conduct a literature review of international geological criteria for selecting sites for new landfills for areas of similar geology and conditions.
- Geological, geophysical, geochemical and hydrological field data acquisition with different sensors and methods at 1-2 test sites and interpret these.
- Groundwater flow modeling using COMSOL multiphysics, FeFlow, SUTRA 3D or PhreeqC.
- Data integration into a multi-layered 3D digital twin model that will form the base of a Deposit Information Model used when building landfills.
- Writing articles for publication in peer-reviewed scientific journals.
- Presenting research findings at scientific conferences.
- Collaboration with other team members.
- Participate in and complete the course program.

The successful candidate is expected to enter a plan for the progress of the work towards a PhD degree during the first months of the appointment, with a view to completing a doctorate within the PhD scholarship period.

The research will be carried out in close collaboration with relevant scientists and institutions affiliated to the Research-Based Innovation Center earthresQue - including NMBU (MINA and RealTek faculties), IFE (Reservoir Department) and other national and international institutions.

Competence

The successful applicant must meet the conditions defined for admission to a PhD programme at NMBU. The applicant must have an academically relevant education corresponding to a five-year Norwegian degree programme, where 120 credits are at master's degree level. The applicant must have a documented strong academic background from previous studies and be able to document proficiency in both written and oral English. For more detailed information on the admission criteria please see the PhD Regulations and the relevant PhD programme description.

Required qualifications:

- Well-rounded background in geosciences including a Master's degree within a relevant scientific field such as: geology, hydrogeology, geochemistry or geophysics.
- Experience with groundwater flow modeling.
- Comfortable with interpreting and integrating multi-disciplinary datasets.
- The following experiences and skills will be emphasized:
- Experience of field work on mapping and collecting samples.
- Strong quantitative skills.
- AcrGIS database management.

You need to:

- Be motivated to work as part of a team.
- Have a keen interest in waste management in the circular economy.
- Have a strong willingness to work partly at NMBU (Ås) and IFE (Kjeller) and conduct field work.

In addition, the candidate must have:

- Good English language skills, written and spoken
- Documented scientific writing skills.

Remuneration and further information

The position is placed in government pay scale position code 1017 PhD. Fellow. PhD. Fellows are normally placed in pay grade 54 (NOK 482 200,-) on the Norwegian Government salary scale upon employment and follow ordinary meriting regulations.

Employment is conducted according to national guidelines for University and Technical College PhD scholars.

For further information, please contact prof. Helen Kristine French (helen.french@nmbu.no) or Dr. Stéphane Polteau (stephane.polteau@ife.no).

Information for PhD applicants and Information to applicants

Application

To apply online for this vacancy, please click on the 'Apply for this job' button above. This will route you to the University's Web Recruitment System, where you will need to register an account (if you have not already) and log in before completing the online application form.

Application deadline: 11.04.2021

Applications should include (electronically) a letter of intent, curriculum vitae, full publication list, copies of degree certificates and transcripts of academic records (all certified), and a list of two persons who may act as references (with phone numbers and e-mail addresses). Publications should be included electronically within the application deadline.

The relevant NMBU Department may require further documentation, e.g. proof of English proficiency.

Printed material which cannot be sent electronically should be sent by surface mail to the Norwegian University of Life Sciences, Faculty of Environmental Sciences and Natural Resource Management, P.O. Box 5003, NO-1432 Ås, within 11.04.2021. Please quote reference number 21/01342.

If it is difficult to judge the applicant's contribution for publications with multiple authors, a short description of the applicant's contribution must be included.

About The Faculty of Environmental Sciences and Natural Resource Management

The Faculty of Environmental Sciences and Natural Resource Management (MINA) works with nature and the environment, sustainable use of natural resources, biological and geological processes.

MINA's employees undertake teaching, research and dissemination within the fields of geology, hydrology and limnology, soil science, environmental chemistry, forestry, ecology, natural resource management, renewable energy, and nature-based tourism.

Our vision is to be a key actor in knowledge production and dissemination, and our goal is to deliver research of high, international quality, and varied and excellent teaching. The faculty's employees are significant participants within their respective fields of expertise, both nationally and internationally. The faculty is dominated by a vital research culture and high levels of scientific production.

The faculty has about 200 employees, 90 PhD students and 650 students.

Read more about MINA here.

The Norwegian University of Life Sciences (NMBU)

NMBU has a particular responsibility for research and education that secures the basis for the life of future generations. Sustainability is rooted in everything we do and we deliver knowledge for life. NMBU has 1,800 employees of which about 250 phd scholarships and 6,000 students. The university is divided into seven faculties and has campuses in Ås and Oslo. We will be co-located in Ås from 2021.

NMBU believes that a good working environment is characterised by diversity.

We encourage qualified candidates to apply regardless of gender, functional ability, cultural background or whether you have been outside the labour market for a period. If necessary, workplace adaptations will be made for persons with disabilities. More information about NMBU is available at www.nmbu.no.

Additional information

Place of service:

Universitetstunet 3 1430 Ås (Ås Municipality)