

Postdoctoral Position: Direct numerical simulation and upscaling of dispersion and reaction fronts in two-phase displacements in heterogeneous porous media

**Institute of Environmental Assessment and Water Research
Spanish National Research Council
Barcelona,
Spain**

Job Description

This postdoctoral position is part of a multidisciplinary research project on underground hydrogen storage (TED2021-129991B-C33). The candidate will benefit from interactions with other team members at the IDAEA and with the collaboration partners at the Technical University of Madrid (UPM) and the University of Coruña (UDC) with expertise in multiphase flow modelling, geochemistry, flow and transport upscaling, pore-scale modelling, and geomechanics.

The successful candidate is expected to lead the modelling of multiphase flow and component transport in heterogeneous porous formations. The specific interest lies on using direct numerical simulations and novel averaging approaches for the upscaling of dispersion and reaction at the invasion front between hydrogen and reservoir fluids from the local to the regional scale.

Duties and Responsibilities

- Develop a continuum scale modelling approach for multiphase flow and component transport in heterogeneous geological media
- Participate in regular project meetings with team members and collaboration partners.
- Provide guidance as required to support staff and research students who may be involved in the research.
- Disseminate the research results in peer reviewed journals and interdisciplinary conferences.
- Contribute to project reports.
- Identify areas for research, develop new research methods and extend the research portfolio.
- Continue to update personal knowledge and develop skills within the own specialist research area.

Qualifications

- Ph.D. degree in engineering, physics, applied maths, hydrogeology, or a related field.

Essential Criteria

- Experience in numerical modelling of flow and transport in porous media
- Experience in programming and scientific software
- Excellent team work and organization skills
- Excellent verbal and written communication skills in English

Desirable Criteria

- Experience in direct numerical simulations using OpenFOAM or COMSOL
- Experience in modelling gas transport in porous media
- Experience in upscaling techniques for porous media

Salary: CSIC Level Doctor-FC3 (€38,000-€40,000/year)

Contract: Full-time, until the end of the project (20 months)

Starting date: 1 March 2023

How to apply?

Those interested may email their **CV**, a **motivation letter** and **contact information of two academic reference** to **Dr Marco Dentz** at marco.dentz@csic.es stating **Postdoc Hydrogen Dispersion** in the email subject.

Deadline: open until filled