

PhD position (3.5 years): Unsaturated reactive transport in porous media: Impact of pore-scale heterogeneity and its alteration by precipitation

Job Description

We invite applications for a PhD in the Institute of Environmental Assessment and Water Research (IDAEA-CSIC). I seek a highly-talented, motivated, and open-minded candidate, for an ambitious new project ([ATRAE](#)). In this project, we aim to develop a modelling platform to upscale multiphase, reactive flows, trained and validated by laboratory mock-ups (idealized setting such as glass beads and millifluidics). Specifically, it will resolve the coupling between fluid / solute transport and reactions (precipitation, dissolution) altering the pore geometry and hence the transport properties. The findings will enhance our understanding of the physics underlying various geoscience applications (notably mineralization in carbon geo sequestration), as well as other engineering problems such as salt damage to heritage monuments.

The project follows up on other ongoing collaborative projects, including [EPSRC](#)-funded project with the [British Geological Survey](#), prof. [Marco Dentz](#) (IDAEA) and prof. [Jordi Ortin](#) (UB), and others with [Prof. Lucas Goehring](#), [Prof. Haida Liang](#) (NTU) and [English Heritage](#).

Qualifications and selection criteria

- Master's degree in geosciences, physics, engineering, applied math, or similar
- Background in modeling transport processes, ideally in porous media
- Experience in scientific programming (Python, Matlab, etc)
- Strong interpersonal skills, interest in teamwork and collaborations
- Good level of English, written and spoken

Conditions

- Full-time contract for 3.5 years
- Generous PhD scholarship (~€27,000/yr, M2 level)
- Preferred start date: 9/2025
- CSIC is an equal opportunity employer, committed to fostering, cultivating and preserving a culture of diversity, equity and inclusion

Organization

The Institute of Environmental Assessment and Water Research ([IDAEA](#)) of the Spanish National Research Council ([CSIC](#)), is a vibrant, international research institute. CSIC is the third largest public research organization in Europe. IDAEA is highly interdisciplinary, with researchers from engineering, physics, environmental, geological, and chemical sciences, studying the human footprint on the biosphere.

How to apply

If you meet the qualification criteria, please send an email to Dr. Ran Holtzman (rholtzman4@gmail.com) titled "application PhD ATRA" which includes the following documents: (1) CV; (2) motivation letter; (3) complete course grades and transcripts (informal scans ok); (4) contact information of two references; (5) links/copies of your MSc thesis and/or publications.