



**MECHANICS of**  
Infrastructure  
**MATERIALS**  
**LAB**

Imperial College  
London

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London

## Postdoctoral Research Associate (PDRA) in Multi-Physics Modelling at Imperial College London, UK

**General Description:** The Mechanics of Infrastructure Materials research group are looking to hire a Postdoctoral Research Associate (PDRA) to work in the EPSRC New Investigator Award project NEXTGEM. The project, led by Dr Emilio Martínez-Pañeda, aims at developing a new generation of electro-chemo-mechanical models that can predict local hydrogen uptake and subsequent cracking by resolving the electrochemistry-diffusion interface and shedding light into critical uncertainties in surface behaviour and trapping. NEXTGEM will merge mechanics with electrochemistry, combining phase field methods and multi-physics modelling to resolve the scientific challenges holding back the applicability of hydrogen embrittlement models. Hydrogen embrittlement is arguably one of the biggest threats to current engineering infrastructure and could jeopardise the promise that hydrogen holds as energy carrier of the future.

The PDRA will have access to state-of-the-art HPC facilities and will also have the opportunity to (co-)supervise PhD and MSc Theses. The initial term will be one year, with the potential to extend the appointment for up to 3 years (the project duration). The starting date is relatively flexible, with a preference for the period August-October 2021.

### Requirements:

You must have obtained or be close to obtaining a PhD in engineering, mathematics, physics, materials science, or other closely-related disciplines. Also, you should have experience in at least one of the following:

- Finite element analysis
- COMSOL
- Hydrogen embrittlement
- Multi-physics modelling
- Phase field methods
- Coupled deformation-diffusion modelling

**Conditions:** The position is open to candidates from any nationality. A very competitive salary will be offered (within the range £40,858-£48,340/year). This is a full time position.

**How to apply:** Applicants wishing to be considered for this opportunity should apply through the following link:

<https://www.imperial.ac.uk/jobs/description/ENG01693/research-associate>

For further details, informal discussion and information about the project please see:

<https://www.imperial.ac.uk/mechanics-materials/>

Or contact Dr Emilio Martínez-Pañeda at [e.martinez-paneda@imperial.ac.uk](mailto:e.martinez-paneda@imperial.ac.uk)