



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

Imperial College  
London

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## Postdoctoral Research Associate (PDRA) in Phase Field Corrosion Modelling at Imperial College London, UK

**General Description:** The Mechanics of Infrastructure Materials research group are looking to hire a Research Associate to work in the development of new phase field-based models for predicting localised corrosion (pitting and stress corrosion cracking). The work is part of a wider project, led by Dr Emilio Martínez-Pañeda, that combines experiments and finite element modelling to shed light into multi-physics interfacial challenges in materials engineering.

Corrosion damage is arguably the most harmful phenomenon compromising the safety and durability of materials and structures. Now, there is an opportunity to develop models that can predict corrosion damage. The phase field paradigm enables tracking the evolution of the solid metal – aqueous electrolyte interface and multi-physics models can simulate concurrent (coupled) physical processes such as chemical reactions, diffusion of species and mechanical deformation; see <https://doi.org/10.1016/j.jmps.2020.104254>. To achieve this, it is necessary to resolve the material microstructure and the electrochemistry of the problem.

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 4 years (the project duration). The starting date is relatively flexible, with a preference for the period October-December 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
- Corrosion damage
- Multi-physics modelling
- Phase field methods

**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/ENG01806/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)