

Doctoral position

Description of the position

The position consists of a 4-year PhD position. Starting position is for one year with option to continue after evaluation.

Candidates should have a master diploma in materials science or chemistry.

Candidates should provide reference persons, willing to be contacted.

Candidates should have background on materials science, electrochemistry and corrosion science. Candidates should indicate experience with modelling.

Research topic: The influence of water and salts on the corrosion protective barrier properties of organic coatings on steel

Organic coatings are very often employed to protect steel structures from corrosion in atmospheric circumstances. Indeed, the ingress of water and salts through the coating from the surroundings has a detrimental effect on the integrity of the steel parts.

In this PhD work, the diffusion of the atmospheric species throughout coatings will be analysed using electrochemical impedance spectroscopy. The coatings that are applied on the steel substrates will be synthesized with an industrial partner. Different parameters in coating composition, influencing the diffusion of species in the coating, will be modified, in order to create a full understanding of the electrochemical processes occurring.

Furthermore, the corrosion reaction underneath the different coatings will be characterized. This will be done using combined electrochemical and chemical analysis techniques. As such, Raman spectroscopy will be deployed to identify the different reaction products formed.

For more information, contact: Herman Terryn, herman.terrryn@vub.be