



Master Thesis

Centre for Construction Materials (MPA-IfW)
Department of Surface Technology



Scope:
6 Months

Workplace:
TU Darmstadt Stadtmitte
Institut für Werkstoffkunde
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Required documents:
Motivation/cover Letter,
Curriculum Vitae,
Studienbescheinigung,
Transcript/Leistungsspiegel

Begin:
2021-09-01

Date Posted:
2021-08-02

Master thesis in research field: Aluminum based pitting corrosion prediction at elevated temperatures

We are looking for a master student who self-reliantly works on a project branch related to material compatibility with sustainable biogenic fuels. The project deals with experimental and simulation description of temperature-induced alcoholate pitting corrosion of automotive-relevant aluminum alloys. We would like to explore the effect of alloy microstructure on the pitting initiation using artificial neural networks and image recognition.

Your Tasks

- Experimental creation of data space for pure aluminum AA1050 alcoholate corrosion by systematic change of descriptors
- Development and documentation of a predictive data and image based model
- Validation of model with independent experiments

Requirements

- Experience with Python and scientific packages like pandas, scikit, numpy, pytorch etc.
- First insights into Machine Learning/Deep Learning/Image Recognition algorithms
- Motivation to explore new workflows and create new ideas
- Knowledge of corrosion processes and accurate lab work skills

