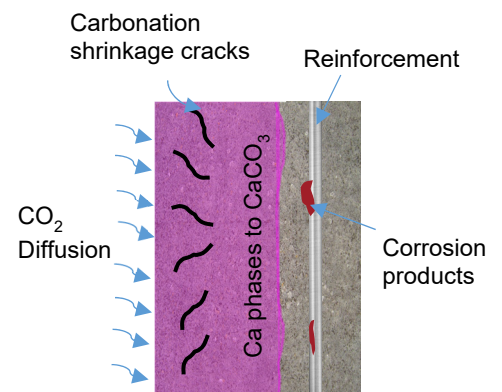


Master Thesis

Carbonation induced corrosion in concrete with novel binders: Multiphysics reactive transport modelling

Background

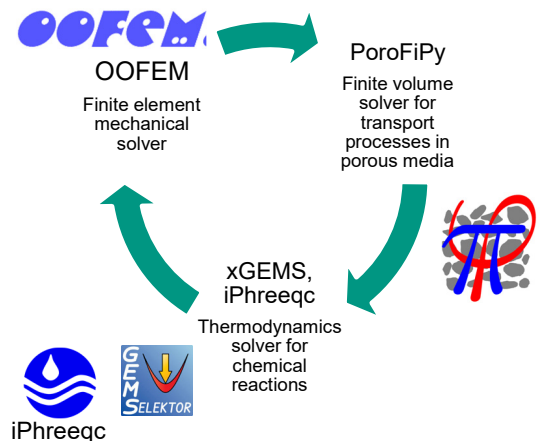
- Alternative sustainable cement systems with novel binders (such as slags, fly ash) are more susceptible to carbonation induced steel corrosion and carbonation shrinkage due to the lack of $\text{Ca}(\text{OH})_2$ as buffer phase.
- Steel corrosion is usually hard to diagnose till it is too late.
- Our goal is to develop a predictive physics- based model which couples transport processes and chemistry of carbonation for cement systems with novel binders.**



Key Tasks

- Literature review on carbonation of blended cement systems and shortlist dataset for validation with model.
- Familiarize with inhouse THC(M) code for modelling coupled processes in concrete structures. Develop input file (chemical and transport input) for the code and extend if necessary.
- Comparison with experimental data and summarizing results.
- Depending on your interest, we can extend this work to account for carbonation shrinkage and corrosion induced damage.

In-house Multi-Physics code for modelling thermo-hydro-chemo-mechanical processes in concrete structures



Contact

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