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Understanding microscale influences of the ITZ using computational modelling

MAGICON

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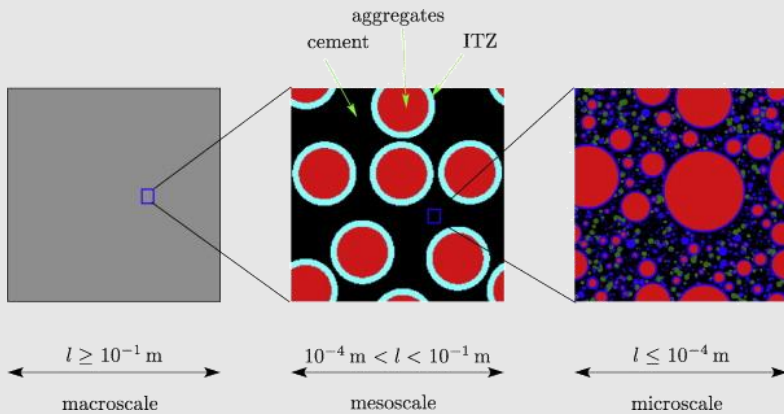
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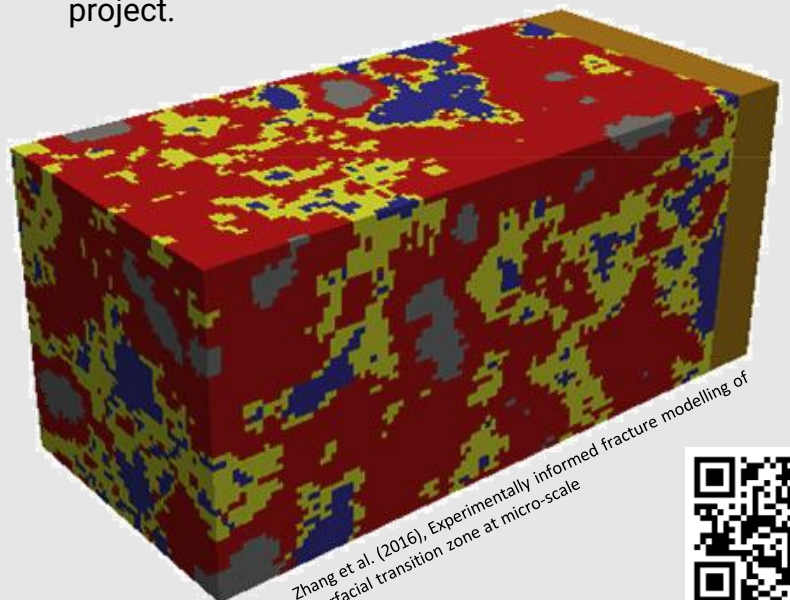
Nguyen et al. (2012), Multiscale failure modeling of concrete: Micromechanical modeling, discontinuous homogenization and parallel computations.

Objective of the research

The objective is to take the properties of the Interfacial Transition Zone (ITZ) as the framework for understanding and improving concrete materials. In order to do this, computational models capturing the mechanical and transport behaviours within the ITZ are to be developed. The input for these models is based on the experiments performed by two fellow PhD's in the MAGICON project.

Method of the research

Two different categories of models can be distinguished, with two different purposes. The first are lattice models to validate the experiments and find the properties at the ITZ for the best fitting performance of the model. The second are FEM multiscale models to connect the influence of the ITZ properties at microscale to the macroscale performance of the concrete materials. These models work in tandem with Machine Learning techniques developed by the fourth PhD within the MAGICON project.



Zhang et al. (2016), Experimentally informed fracture modelling of interfacial transition zone at micro-scale

MAGICON project

