

# COMPUTATIONAL MODELING OF DURABILITY AND FAILURE OF CEMENTITIOUS MATERIALS AND COMPOSITES ACROSS SCALES

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GÜNTHER MESCHKE<sup>\*</sup>, JITHENDER J. TIMOTHY<sup>\*</sup>  
AND CHRISTIAN HELLMICH<sup>†</sup>

<sup>\*</sup> Ruhr University Bochum  
Universitätsstrasse 150, 44801, Bochum Germany  
www.sd.rub.de  
[guenther.meschke@rub.de](mailto:guenther.meschke@rub.de), [timothy.jithenderjaswant@rub.de](mailto:timothy.jithenderjaswant@rub.de)

<sup>†</sup> Vienna University of Technology (TU Wien)  
Karlsplatz 13/202  
A-1040 Wien (Vienna), Austria  
[christian.hellmich@tuwien.ac.at](mailto:christian.hellmich@tuwien.ac.at)

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## ABSTRACT

This mini-symposium will focus on recent advances, challenges, and on-going research in computational models for cementitious materials and composites focusing on characterizing fracture and/or transport processes and their mutual interactions within the context of durability and material design across multiples scales. Among others, the following topics will be covered by the minisymposium:

- Multiscale and multilevel models for the characterization of cementitious materials and composites
- Multiscale models for fatigue failure of cementitious materials
- Multiscale micromechanics and computational meso-scale models (e.g. Pore-network models, Lattice, CT based FE models) for characterizing damage and/or transport in cementitious materials
- Homogenization and upscaling methods (continuum micromechanics, computational homogenization etc.)
- Novel discretization methods (cohesive zone models, phase-field models, gradient (non-local) damage models, XFEM, peridynamics etc.) applied to fracture processes in concrete
- Modeling of transport and physico-chemo-mechanical processes (creep, shrinkage, chemical dissolution, chemically expansive processes)