

MULTISCALE COMPUTATIONAL FORMULATION OF CONCRETE AND OTHER QUASI-BRITTLE MATERIALS

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ABSTRACT

The motivation for this Mini-Symposium arises from the necessity to have accurate and efficient models for the analysis of structures made up from complex brittle materials. In particular, the necessities to resolve nano/micro/meso-structural phenomena in multiphase materials such as cement based and other quasi brittle composites, and bridging between the scales. The behavior of concrete and cement based materials subjected to a variety of physical processes are important engineering challenges, we are suggesting focusing this Mini-Symposium on multi-scale modeling of these types of materials.

This Mini-symposium intends bringing together researchers associate with multi-scale analysis with emphasis on concrete, cement based and other brittle materials. The main objective is to enable broad research discussions related to, but not restricted to, the following topics:

- reduced order models;
- non-periodicity aspect;
- non-scalable structures;
- homogenization methods and formulations;
- computational aspect in multi-scale simulations;
- micromechanics of brittle materials;
- multi-scale experimental aspects;
- verification and validation;
- adaptive schemes;
- enrichment methods;
- multi-physics;
- cement paste nano/micro-scopic behavior