DAMAGE AND FAILURE OF COMPOSITE MATERIALS AND STRUCTURES

TRACK NUMBER 100

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Key words: Composites, Damage and failure, Delamination, multi-scale modelling

ABSTRACT

The objective of this mini-symposium is to provide a forum for the in-depth discussion of new and recent analysis methods that simulate the non-linear deformation, damage and failure of structural composite materials. Such models may address different matrices (e.g. polymer, ceramic, metal), different reinforcement materials (e.g. carbon, glass) and architecture (e.g. laminates, fabrics, spread tows). Abstracts submitted to this mini-symposium may also include models developed at different length and time scales, addressing quasi-static or dynamic loading and degradation mechanisms such as fatigue. Recent developments on the constitutive and kinematic representation of the failure mechanisms of composite materials are also within the scope of this mini-symposium. In summary, the following topics are welcome:

- Failure of polymer, ceramic and metal-matrix composites.
- Failure of unidirectional, non-crimp, braided and woven fabrics.
- High-strain rate response of composites.
- Simulation of composites under fatigue loading.
- Micro, meso, and macro-mechanical modelling of composites.
- Multi-scale modelling of composites for structural length scales.
- Advanced kinematic representations of discrete fracture in composites.
- Simulation of the hygro-thermal degradation of polymer composites.
- Effect of defects and uncertainties