

A mini-Symposium on Advanced mechanical modeling of composite materials and structures

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The increased availability of computational tools and theoretical models allows us to investigate the complex behavior of composite materials and structures, accounting for various possible interactions at different scales. In this context, the present mini-symposium aims at gathering engineers and scientists working with the statics, dynamics, buckling, vibration, and damage and fracture mechanics composite materials and structures. Enhanced structures like architected structures and composite materials feature internal length scales and a non-local behavior, whose response could be affected by different stacking sequences, ply orientations, agglomerations of nanoparticles, volume fractions of the constituents, porosities, and architecture. Innovative components such as functionally graded materials, carbon nanotubes, graphene nanoplatelets, smart constituents, as well as innovative and advanced classes of composites, including architected engineered structures can be explored. To this end, classical and nonlocal theories are welcome, together with multiscale approaches, fracture mechanics models of brittle and ductile materials, as well as regularization and approximation techniques of crack discontinuities, involving different engineering problems and applications.

Topics

- Advanced Computational methods
- Architected materials and structures
- Auxetic materials
- Buckling behavior
- Carbon nanotubes
- Complex materials
- Composite beams, plates and shells
- Constitutive models
- Damage
- Dynamics
- Fracture mechanics
- Functionally graded materials
- Homogenization techniques
- Metamaterials
- Nanostructures
- Smart materials
- Statics
- Theoretical, numerical, and experimental strategies