

## Special Issue on

### Modelling and Optimizing Structural Behavior of Advanced Materials for Aerospace

# CALL FOR PAPERS

Aeronautics and aerospace face great pressure for ever increasing performance and efficiency while ensuring maximum reliability and controlling costs. Materials selection, structural design, and fabrication methods play a central role among many different contributions for achieving those objectives.

The main metallic materials have been Al alloys, where the introduction of special alloying (Li, Sc, etc.) may substantially improve performance. Ti alloys play an increasingly important role, namely, because of their corrosion performance. The trends for additive manufacturing (AM) imply that components may become simpler, reducing weight and part count, a trend that is also supported by fabrication techniques as friction stir welding or laser beam welding leading to integral structures.

Among composites, thin ply laminates and design of composites for specific performance are the object continuing interest and progress. Joining and adhesive technology is an important area where improved structural performance and durability are expected.

Open problems exist in all those areas, as exemplified by the assurance of integrity and mechanical performance of AM parts or the improvement of composite structures fabrication through reduction of shimming and other nonadded value operations.

The understanding of the mechanical behavior and its incorporation into design practice is made through structural analysis, and this subject is also of interest for this special issue. Computational mechanics has progressed from the traditional FEM and DBEM approaches to combined/hybrid and multiscale analyses that may accurately model and predict crack paths and damage within controlled computational effort. Some complications arise when considering modelling of crack propagation in orthotropic materials like single crystal and directionally solidified polycrystalline components (typical application in first stage aircraft turbines).

We invite researchers to contribute original research articles as well as review articles on modelling and optimizing structural behavior and damage of advanced materials used in aeronautics and aerospace, also considering nondestructive testing and evaluation.

Theoretical, numerical, and experimental contributions describing original research results and innovative concepts on aeronautical and aerospace materials and structures are welcome.

The submission of original, high quality contributions that are not yet published or that are not currently under review by other journals or peer-reviewed conferences is expected.

Potential topics include but are not limited to the following:

- ▶ Additive manufacturing
- ▶ Damage and fracture mechanics
- ▶ Fatigue fracture and failure mechanisms
- ▶ Innovative failure diagnostics and quality control
- ▶ Life prediction and remaining useful life estimation
- ▶ Multiphysics damage modelling and analysis
- ▶ Multiscale modelling and analysis
- ▶ Residual stresses
- ▶ Stochastic modelling
- ▶ Structural and computational mechanics
- ▶ Mechanical behavior of turbine components and engines

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/ijae/mosbam/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

#### Lead Guest Editor

Roberto G. Citarella, Universita di Salerno, Fisciano, Italy  
[rcitarella@unisa.it](mailto:rcitarella@unisa.it)

#### Guest Editors

Filippo Berto, Norwegian University of Science and Technology, Trondheim, Norway  
[filippo.berto@ntnu.no](mailto:filippo.berto@ntnu.no)

Paulo T. de Castro, Faculdade de Engenharia da Universidade do Porto, Porto, Portugal  
[ptcastro@fe.up.pt](mailto:ptcastro@fe.up.pt)

#### Submission Deadline

Friday, 9 March 2018

#### Publication Date

July 2018