

Special Issue

Advanced Modelling and Simulation of Composite Materials and Structures

Message from the Guest Editors

The increasing complexity and diversity of composite materials and structures demand sophisticated modelling and simulation techniques to accurately predict their mechanical behaviour, failure mechanisms, and long-term performance. From fibre-reinforced polymers and woven textiles to 3D-printed composites and multi-scale architectures, these materials present unique challenges that classical analytical approaches cannot fully address. Advances in computational methods—including the Finite Element Method, full-field spectral methods, micromechanical modelling, and data-driven approaches—combined with high-resolution characterisation techniques such as micro-computed tomography, are opening new frontiers in virtual material design and structural assessment.

This Special Issue invites original research articles and review papers that advance the state of the art in modelling and simulation of composite materials and structures. Topics of interest span micro-, meso-, and macro-scale analyses, damage and failure modelling, the integration of experimental data into computational frameworks, and emerging manufacturing processes such as additive manufacturing.

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About the Journal

Message from the Editor-in-Chief

We encourage you to contribute a research or comprehensive review article for consideration and publication in *Modelling* (ISSN 2673-3951), an international open access journal, which is published quarterly online by MDPI. The editorial board and staff of *Modelling* are dedicated to providing an advanced forum for studies related to the development and applications of modelling and simulation techniques. The journal publishes original research articles, reviews, conference proceedings (peer reviewed full articles) and communications.

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