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Numerical Methods and Modeling Applied for Composite Structures

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Message from the Guest Editors

Dear Colleagues,

Designing modern structures with optimised strength and stiffness parameters requires the use of modern technologies. This applies in particular to high-tech aeronautical or automotive structures, in which the most beneficial solutions in terms of operation and durability are obtained, for example, by replacing previously used materials with modern composite materials. These primarily include polymer laminates reinforced with continuous fibres, most commonly carbon-fibre-reinforced plastics and glass-fibre-reinforced plastics (). Due to the very favourable mechanical properties of these materials in relation to their own weight, it has become possible to use fibre composites for carrier elements of thin-walled structures. Laminates make it possible to create the mechanical properties of designed components in terms of their ability to carry the appropriate type of load. Existing studies on composite structures primarily focus on analytical and numerical analyses of idealized cross sections subjected to simple loading cases like compression, shear, or bending. Experimental tests of these considerations on real construction elements is limited.

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Message from the Editor-in-Chief

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