



Materials and Manufacturing Process Modelling

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Message from the Guest Editor

Over the years, mechanistic, empirical, and numerical models were extensively developed to simulate manufacturing processes or material mechanical behavior. However, limited published models can integrate the influence of material microstructure constituents together with manufacturing processes for process planning. One of the key factors for any manufacturing process simulation is the reliable mechanical behavior of material data. The most challenging aspect to simulating the effect of different percentages of material microstructure constituents in any manufacturing process is acquiring the stress strain curves experimentally. This can be overcome by designating specific elements that are more sensitive to strain hardening or strain rates when using finite element methods. Such an approach can reduce the dependence of experimental data, which are time consuming and costly to acquire. Furthermore, it can also simulate the mechanical behavior of metallic additive manufacturing materials.





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Message from the Editor-in-Chief

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