

Special Issue

3D/4D Printing of Metamaterials and Multifunctional Structures

Message from the Guest Editor

Recent advances in material development and additive manufacturing have led to four-dimensional (4D) printing technology for creating metamaterials and smart structures that can change their shape and/or function on demand and over time. This emerging technique provides an effective means from idea to reality with performance-driven functionality built into the structures. In this respect, the material and fabrication characteristics as well as geometrical design play important roles. In this Special Issue, we focus on recent advances in the development, manufacturing, and characterization of advanced metamaterials in different research and industrial fields. Metamaterials and lattice-based structures can be designed to obtain either specific nonlinear elastic responses, or nonlinear elastic behaviors under applied stress/temperature. They can also be used to drive programmable shape transformations under compression/tension in a monostable or multistable manner or under thermal loading. The application of novel smart and multifunctional structures includes but is not limited to aerospace, biomechanics, acoustics, and mechanical performance.

Guest Editor

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