Soft, Multi-Functional and Architected Materials

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The investigation of functional and architected materials has rapidly advanced in the last decade. For example, the combination of different phases within micro-heterogeneous composites, with individual physical characteristics of the individual constituents, allows for the design of materials with outstanding effective properties. The multi-physics nature of functional materials poses multiple challenges in scale-bridging, modeling, simulation and designing architected materials with new functionalities. In addition, recent advances in additive manufacturing and design for additive toolsets open an exciting opportunity to predict, physically realize and test material architectures with unique and pre-defined functionalities.

This session aims to bring together experts in soft active materials, constitutive modeling, design optimization, and manufacturing in the field of **functional** and **architected materials** to present and discuss recent advances.

Topics of particular interest include (but not limited to):

- 3D printing of architecture materials and composites
- Topology optimization of material architecture
- Electro- and magneto-active materials
- Mechanical and acoustic metamaterials
- Responsive gels; Shape-memory and light-sensitive materials
- Microstructural and material instabilities
- Bio-inspired and biological materials