

# Direct-Action and Crushable Lattice Materials Systems: Functions and Properties

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Structural weight can also be reduced by replacing solid sheets with engineered lattice materials systems that are composed of miniaturized space-filling metallic struts and shells. The key is to understand at the fundamental level the connection between topologies and electro-thermo-mechanical functions. This talk focuses on strength-enhancement with direct-action topologies that contain sacrificial sub-structures and energy-absorption enhancement with crushable cores exploring the advantages of fold propagation and auxetic resilience.