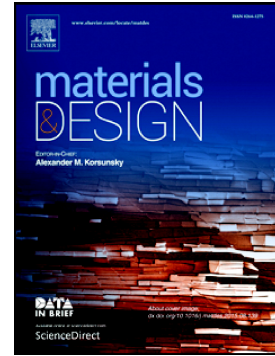


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Compressive properties of hollow lattice truss reinforced honeycombs (Honeytubes) by additive manufacturing: patterning and tube alignment effects

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ABSTRACT

Honeytubes, a novel type of honeycomb formed by reinforcement with lattice trusses, were reported to exhibit enhanced buckling resistance. However, an in-depth analysis for the compressive performance and energy absorption capacity was lacking. In this paper, the effects of microstructure and tube alignment on compressive properties was studied. Four types of honeytubes were designed based on different topologies, geometries and tube patterns, and fabricated by selective laser sintering (SLS). Out-of-plane compression tests and finite element simulation were performed for the analysis. Results indicated that incorporation of lattice in honeycombs resulted in greater local strain in tubes and tube-rib

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