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Dynamic deformation of heterogeneous media: A materials scientist's perspective[1]

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Traditionally, materials design assumes full density during the usage of materials, and rather explicitly excludes open spaces. However, with increasing usage in structural applications of cellular solids and the advent of additive manufacturing to make intricate shapes this assumption is flying out the window. But this raises the question of how we deal with the underlying physics associated with the void space, particularly when such materials architectures are dynamically loaded. This builds upon decades of work on granular systems, particularly powder composites and sand. Using as examples polymeric structured lattices and particle composite mixtures we will examine the influence of the void space on the overall response of the material mesostructure.

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