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Mechanical properties of an improved 3D-printed rhombic dodecahedron stainless steel lattice structure of variable cross section

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## Highlights

- A new modified RD lattice structure is proposed.
- The quasi-static compression behavior of the proposed new RD lattice structure is investigated experimentally and numerically.
- The proposed modified RD lattice structure exhibits better mechanical properties than the original one.
- The mechanical properties and deformation mode of the RD lattice structures are affected by the shape parameter of the cross section of the lattice struts.

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