

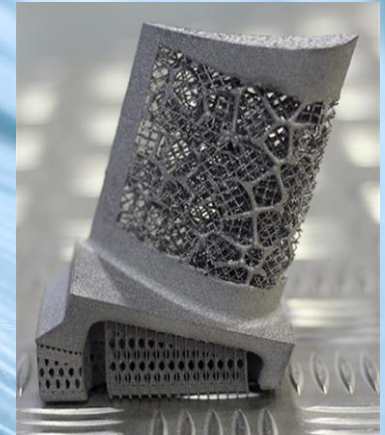
Defect Mechanics in Lattice Materials

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Research Scope:

- Classification of lattice materials
- Classification of the defect configuration in lattice materials
- Development of defect mechanics for lattice materials
- Experimental studies on 3D printed perfect and imperfect lattice materials
- Design and optimization of lattice materials (to be used in lightweight technologies)

LIGHTer



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Defect Mechanics in Lattice Materials

- Lattice materials are formed by periodic arrangement of open building unit cells according which one can classify the material. Depending on the geometry and connectivity, the dominant mechanism of a lattice material can be stretching or bending. These materials have a considerable potential for the application in lightweight technologies for automotive, aerospace and biomedical industries while, currently, the lack of understanding their behavior in the presence of simple and complex defects is limiting their application.
- In this project analytical, computational as well as experimental methods will be used to analyze imperfect lattice materials. The generalized continua will be employed for modeling the material while for mechanical testing, perfect and imperfect lattices will be manufactured by 3D printing.