

## "Study of Hierarchically Architectured Materials

Research Assistant | Duration: Feb 2021 - May 2021

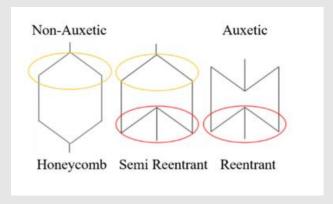
## System Overview

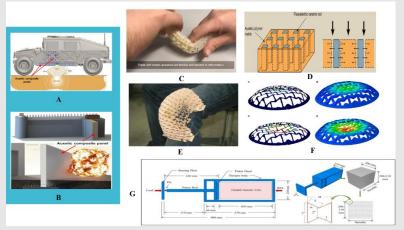
Investigated auxetic structures to enhance mechanical resilience, flexibility, and energy absorption in engineering applications.

## Key Contributions:

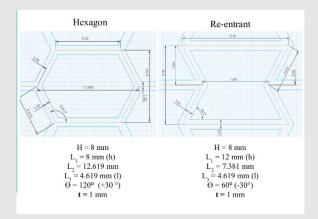
✓ FEA Analysis & Optimization – Simulated stress distribution & deformation patterns using Autodesk Fusion 360 to determine optimal auxetic configurations.

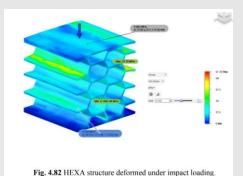
✓ Material Performance Evaluation – Assessed load-bearing capacity, impact resistance, and flexibility across multiple auxetic structures.





## Results and observations





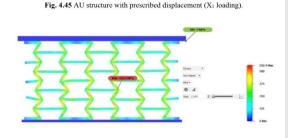


Fig. 4.46 AU honeycomb structure after 2mm displacement in X1 direction.

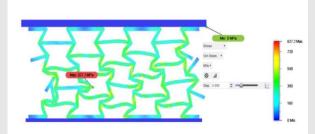
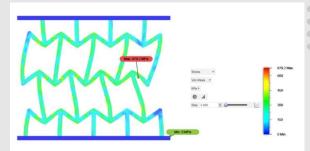


Fig. 4.47 AU honeycomb structure after 6mm deformation in X<sub>1</sub> direction.





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Fig. 4.58 AU structure after 2mm deformation in X2 direction.

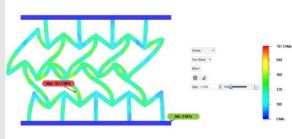


Fig. 4.59 AU structure after 8mm of deformation in X<sub>2</sub> direction.

