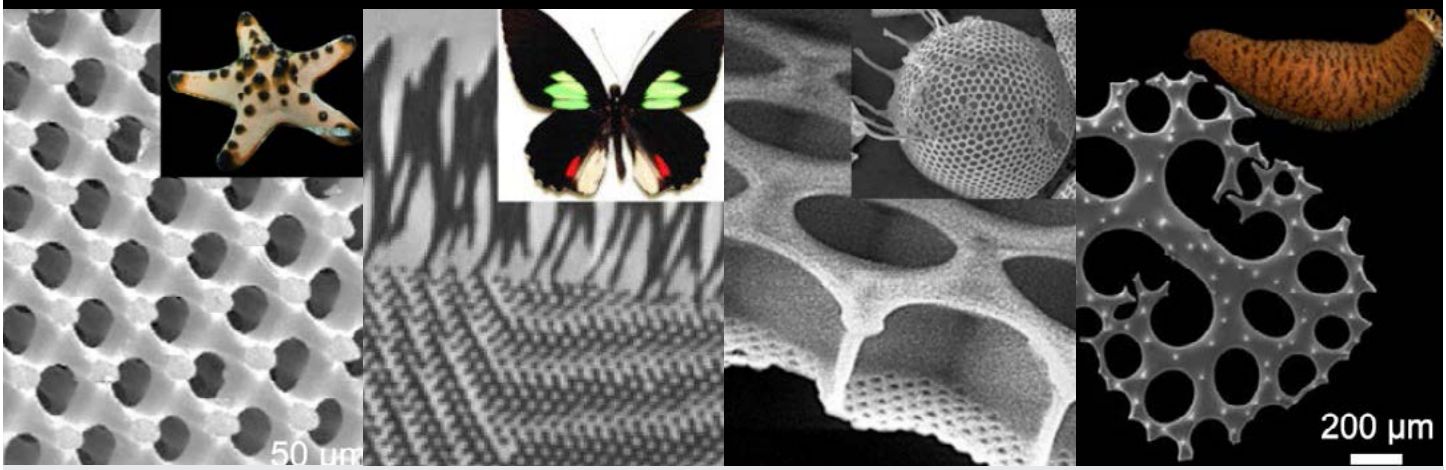
PRODUCT SHEET | AEROSPACE & DEFENSE

LATTIX

Lattice Matrix Armor Systems



Natural structures inspired LATTIX's design. (Z. Jia et. al, Matter, 2023).

Summary

Originally developed as micro-meteorite space debris armor, LATTIX offers an armoring technique that can be applied to modular panels for aircraft or helicopters.

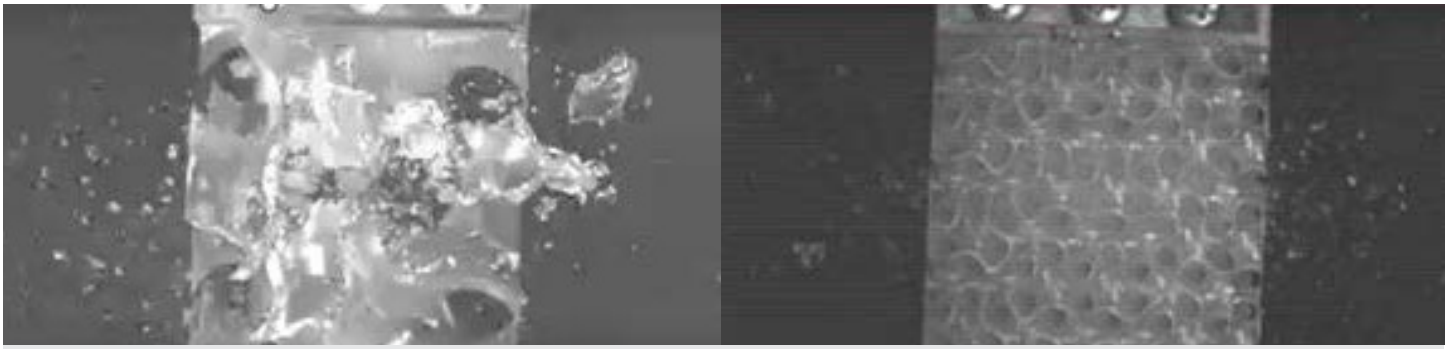
Technology

LATTIX leverages Oceanit's AI for designing bio-inspired ultralightweight, high-strength, and impact resistant armoring structures.

Triply Periodic Minimal Surface (TPMS) structures, found in natural materials such as butterfly wings and bone, are used as the base design from which LATTIX optimizes structures.

Details

TPMS structures have a zero-mean curvature, meaning they have limited areas of stress concentration independent of the direction of loading. Since TPMS structures are mathematically expressed, it is possible to optimize for multiple requirements, such as light weight and impact resistance. Due to their complexity, LATTIX structures must be additively manufactured.



High velocity impact experimental results show the damage sustained when a bullet is shot at an unoptimized structure (left) versus a LATTIX optimized structure (right) of the same density.

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