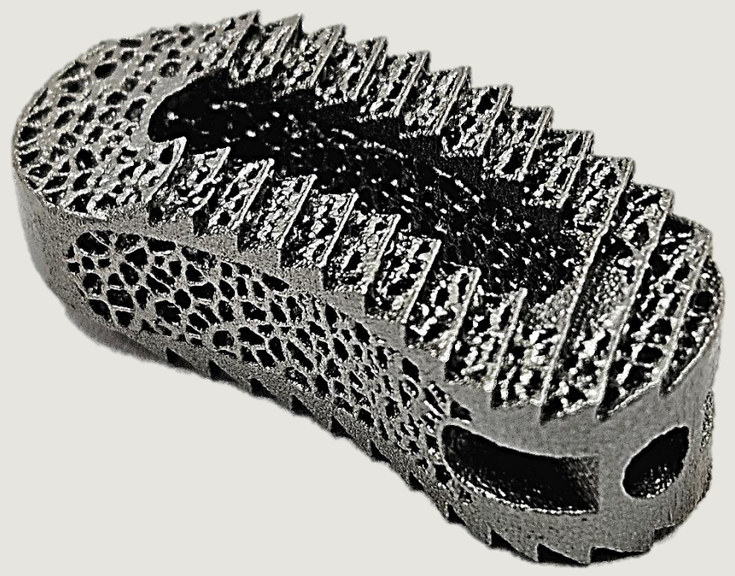
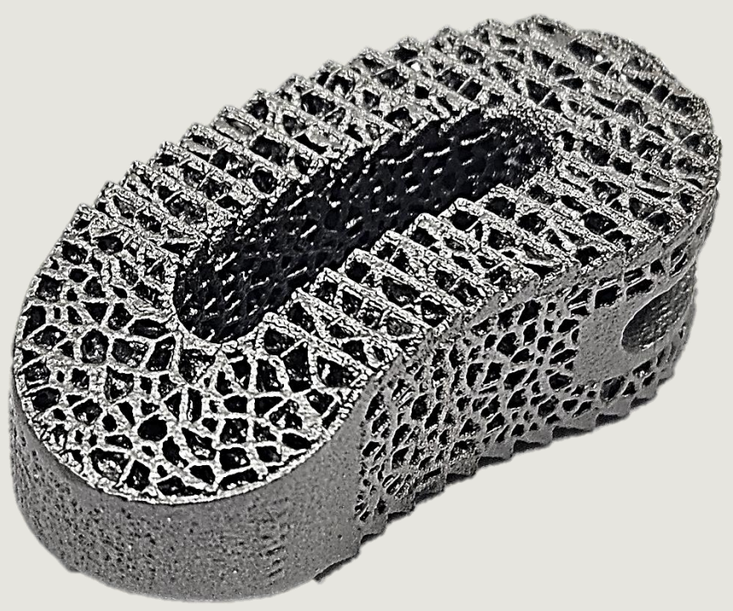
ADDITIVE MANUFACTURED LATTICE STRUCTURED TLIF SPINAL IMPLANTS

- Transforaminal Lumbar Interbody Fusion (TLIF) implants are indispensable in spinal surgeries, particularly for treating conditions such as disc degeneration, spinal instability, and deformities that compromise spinal function and cause chronic pain.
- These implants are designed to restore spinal stability by replacing damaged intervertebral discs and promoting fusion between vertebrae.
- With the introduction of additive manufacturing, TLIF implants now feature advanced lattice structures that significantly enhance their functionality. The lattice design not only provides superior structural strength to withstand mechanical loads but also fosters biological integration by promoting bone ingrowth.
- This combination of mechanical stability and biological activity ensures a more robust and long-lasting fusion.





❖ **Key Features:**

- **Lattice Design for Bone Ingrowth:** The porous lattice structure mimics natural bone architecture, encouraging bone ingrowth and osseointegration for enhanced spinal fusion.
- **Optimized Load Distribution:** The lattice structure distributes mechanical loads evenly across the vertebrae, minimizing stress concentrations and mimicking natural spinal mechanics.
- **Biocompatible Materials:** Manufactured from titanium alloy Ti6Al4V ELI, these implants offer excellent durability, strength, and corrosion resistance.

❖ **Applications:**

- Used in TLIF surgeries to stabilize the spine and promote fusion in conditions like spondylolisthesis, degenerative disc disease, and spinal deformities.
- Helps alleviate nerve compression by maintaining disc height and relieving pressure on spinal nerves, reducing pain and improving mobility.

❖ **Advantages:**

- Promotes faster and more robust spinal fusion due to enhanced osseointegration.
- Reduces the risk of implant migration or failure through precise fit and load-sharing properties.
- Lightweight design minimizes surgical complications while maintaining structural integrity.
- Improves post-surgery recovery by enhancing fusion rates and reducing stress shielding.

Developed by CSIR-CSIO, Chandigarh.