

HIGH-SPEED LASER STRUCTURING OF ELECTRODES

What We Do: Empower advanced battery production by employing high-speed laser micro and nanostructuring technologies for 3D electrode architectures fabrication.

Our Edge: Our unique technology combines high-energy pulsed ultrashort laser systems, beam shaping, and multi-beam micro and nanostructuring technologies, achieving record productivity in nanostructuring of electrodes.

Benefits of Laser-Structured Electrodes

Enhanced Active Area

- Promote stable electrodes
- Improve catalyst adhesion

Improved and Stable Performance

- Sustain performance under extended operating times
- Lower Area Specific Resistance (ASR)
- Reduce overpotential for improved performance
- Maintain consistent medium-term performance

Efficient Energy Utilization

- Enable better energy utilization
- Increase battery efficiency and lifespan




Versatility and Adaptability

- Adapt to various types of batteries, including lithium-ion and zinc-air

Environmental Considerations

- Potential to reduce the environmental impact of battery production
- Lower long-term production costs

Adhesion Details

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HiLASE PERLA Laser System
 An Ytterbium-based DPSSL laser system capable of operating at different repetition rates, providing flexibility in performance.
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Spatial Light Modulator (SLM) Based Beam Shaping Module FBS G3
 Equipped with a spatial light modulator and galvanometer scanner, enabling fast and efficient machining of complex 3D parts.
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Record Nanostructuring Productivity
 A unique combination of the laser system with the SLM achieves record nanostructuring productivity of over 1900 cm²/min with structure detail below 750 nm.

Areas of Application

						
AEROSPACE	AUTOMOTIVE	TOOLING	BIOMEDICAL	POWER AND ENERGY	FLAT PANEL DISPLAY	FOOD AND PHARMACEUTICAL

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