

Laser4surf

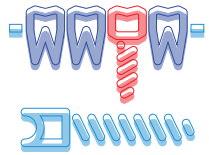
NANO PATTERNS

FOR INDUSTRIAL APPLICATIONS

AIM OF LASER4SURF

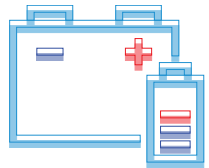
This EU-funded H2020 project aims to bring LIPSS to mass production. This will be achieved by developing an easy to handle **all in one machine** that comprises a laser texturing device, an in-line monitoring system and simulation tools. Three use cases will demonstrate increased product performance:

Applying a specific type of pattern or roughness onto the surface in order to change its properties using laser technology offers a significant commercial potential. This is because it allows **improved product performance without altering the surface's chemical composition or adding any coatings**. Femtosecond LIPSS will enable high resolution features ($<1\mu\text{m}$) in very precise locations with **cost-effective process times**.



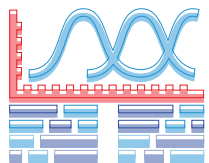
1) MEDICAL COMPONENTS

Antibacterial properties against mouth infections along with a surface enabling a good biological response by the surrounding tissues will deliver the **new generation of dental implants**.



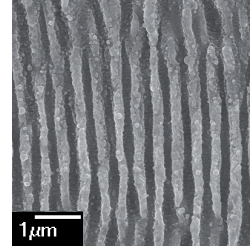
2) ADVANCED BATTERIES

Enhanced adhesion and roughening of the current collector will allow controlled changes in the current collector surface in a **very cost-effective and fast way (0.1 min/cm^2)**. It will also **improve the electrochemical properties of battery current collectors**.



3) LINEAR ENCODERS

Tuning the reflection properties on the scale will make the encoder **less prone to misalignments**.



WHAT ARE LIPSS?

Laser Induced Periodic Surface Structures (LIPSS) are naturally created by the interaction of ultrashort pulse laser beams with a surface. **High resolution features** (in the range of $100\text{ nm} - 1\mu\text{m}$) can be defined in **precise locations** of the component.

DLIP - Direct Laser Interference Patterning

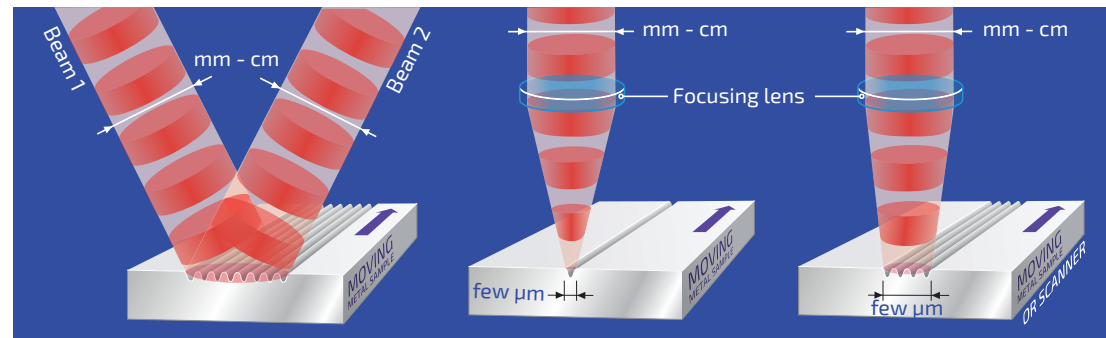
- Nano pattern possible
- Patterning on precise location possible

DLA - Direct Laser Ablation

- Low processing

LIPSS - Laser Induced Periodic Surface Structures

- Higher resolution
- Much faster processing than DLA



Laser4surf

LASER FOR MASS PRODUCTION OF
FUNCTIONALISED METALLIC SURFACES

www.laser4surf.eu



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