

EUR LIGHT Sciences and Technologies PhD positions available for application

SELIBS - Surface-enhanced LIBS

Thesis title	SELIBS - Surface-enhanced LIBS : theoretical and experimental study of laser and plasma interactions with 3D microstructures obtained by femtosecond laser additive manufacturing.
Doctorate specialization	Lasers, Matter and Nanosciences
Research Unit	Institut de Chimie de la Matière Condensée de Bordeaux - UMR5026
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Project Summary

The SELIBS project (*Surface-enhanced LIBS*) aims at developing a new generation of substrates offering very high analytical performance in the context of multi-elemental LIBS analysis of liquids. This involves applying the principles and know-how of 3D laser additive manufacturing and the incorporation of nanoparticles at component level. An AI-based approach will be studied to deal with the large number of underlying parameters. The aim is not only to evaluate our home-made SELIBS substrates, but more generally to understand the physical parameters and interactions responsible for the improvements. Another outcome is a methodology for evaluating and comparing the analytical performance of different types of LIBS substrates dedicated to liquids analysis. This project is located at the crossroads of materials science, laser-matter interaction, plasma physics and analytical chemistry and consists of theoretical and experimental studies aimed at describing and controlling the physical interactions responsible for enhancing plasma emission.