Development and optimization of the LASAT to control adhesion of biocompatible porous coatings

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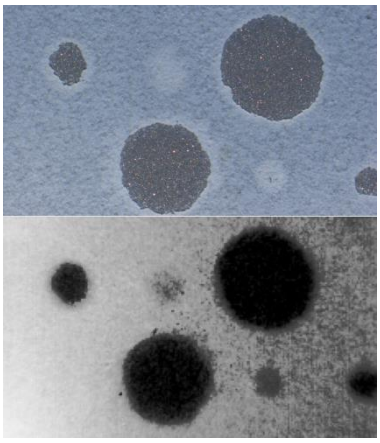

Top surface view of bioceramic coating after laser shocks
Optical (top) or IR (bottom)

- Implementation of LASAT applied to porous multilayered coatings
- Study of ceramic/metal interfaces
- Modelling of shock wave propagation and mechanical behavior under dynamical loading
- Comparison with conventional mechanical tests

Abstract:

The LASAT (Laser Shock Adhesion Test) represents a promising alternative to support manufacturers of biomedical prostheses in their process / product developments, entering market. A LASAT method must be developed on biocompatible deposits in order to best respond to the problems associated with the implementation of a fast and robust adhesion test that is expected to be standardized in a near future. The thorough study of biocompatible deposits submitted to laser shock debonding must allow the optimization of a LASAT protocols and the characterization of phenomena impacting the mechanical strength of interfaces in relation to the control of industrial manufacturing processes. The study of the feasibility of the technique on various industrial biomaterials, the choice of a complete and transferable test protocol will be supported by the carrying out of cross-evaluations by various methods of measurement or calculations of interfacial mechanical strength. The study of the robustness (repeatability and reproducibility) and the reliability of LASAT will be the main indicators of this study which would lead to the definition of a new demonstrator.