

*Special Issue Reprint*

## Current Research in Pulsed Laser Deposition

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Despite its limitation in terms of surface covered area, the PLD technique still gathers interest among researchers by offering endless possibilities for tuning thin film composition and enhancing their properties of interest due to: (i) the easiness of a stoichiometric transfer even for very complex target materials, (ii) high adherence of the deposited structures to the substrate, (iii) controlled degree of phase, crystallinity, and thickness of deposited coatings, (iv) versatility of the experimental set-up which allows for simultaneous ablation of multiple targets resulting in combinatorial maps or consecutive ablation of multiple targets producing multi-layered structures, and (v) adjustment of the number of laser pulses, resulting in either a spread of nanoparticles, islands of materials or a complete covering of a surface. Moreover, a variation of PLD, known as Matrix Assisted Pulsed Laser Evaporation, allows for deposition of organic materials, ranging from polymers to proteins and even living cells, otherwise difficult to transfer unaltered in the form of thin films by other techniques. Furthermore, the use of laser light as transfer agent ensures purity of films and pulse-to-pulse deposition allows for an unprecedented control of film thickness at the nm level. This Special Issue is a collection of state-of-the art research papers and reviews in which the topics of interest are devoted to thin film synthesis by PLD and MAPLE, for numerous research and industry field applications, such as bio-active coatings for medical implants and hard, protective coatings for cutting and drilling tools withstanding high friction and elevated temperatures, sensors, solar cells, lithography, magnetic devices, energy-storage and conversion devices, controlled drug delivery and in situ microstructuring for boosting of

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