

## Laser plasma threshold. Numerical study in COMSOL

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Plasma threshold under high power laser interaction with the matter is a topic of high interest for the research that hasn't been fully elucidated. Due to the large number of parameters that define the phenomena during the process of ablation and generation of laser plasma, it is difficult to anticipate the behavior of materials under the incidence of laser radiation. The dependence of the optical parameters on the wavelength of the laser radiation makes necessary a complex analysis when aiming at optimizing the ablation process from the perspective of the laser radiation emission domain. In addition, the phenomena of heating and heat transfer that have as a source the laser power density lead to an even greater complexity of parameters and formulas whose compilation requires functional numerical models and which describe as completely and accurately as possible the processes generated by laser irradiation applied to a certain material of a given composition. Numerical models and simulation results in COMSOL for various inorganic as well as polymeric and biopolymeric materials are analyzed in this study on the plasma threshold. The comparison with experimental results completes the information of the proposed investigation.