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Imaging of solid aerosols produced by optical catapulting

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Abstract content :

The analysis of solid aerosols has a great importance in many fields of applications including atmospheric sciences, process monitoring and control. Optical catapulting OC is a good sampling method and has been used in combination with Laser induced breakdown spectroscopy LIBS for analysis of solid aerosols. In the present study Imaging experiments were performed in order to probe the behavior and dynamics of OC- produced solid aerosols. Two synchronized Nd: YAG lasers have been used, one for optical catapulting at wavelength = 1064 nm and the other for imaging purpose at wavelength = 532 nm. Standard aluminium silicate particles of size ranging from 0.2 to 8 μm have been used as catapulting target. Several parameters relevant to aerosols dynamics have been studied, such as the effect of interpulse delay time Δt , the effect of laser fluence as well as the effect of working distance. Experimental velocity values of the solid aerosols have been also obtained.

Primary authors : Mr. MOHAMED, Mahmoud (The National Institute of Laser Enhanced Science)

Co-authors : Mr. FERNANDEZ-BRAVO, Angel (Department of Analytical Chemistry, Faculty of Sciences, University of Malaga, Spain) ; Dr. FORTES, Francisco Javier (Department of Analytical Chemistry, Faculty of Sciences, University of Malaga, Spain) ; Prof. ABDEL HARITH, Mohamed (The National Institute of Laser Enhanced Science) ; Prof. LASERNA, Javier (Department of Analytical Chemistry, Faculty of Sciences, University of Malaga, Spain)

Presenter : Mr. MOHAMED, Mahmoud (The National Institute of Laser Enhanced Science)

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