3rd National Congress on Physical Sciences, 29 Sep. – 2 Oct. 2016, Sofia
Section: Atomic Physics and Plasma Physics

Recent Advances in Laser Induced Breakdown Spectroscopy (LIBS): Material Analysis and Applications to Different Fields

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Abstract. Laser-induced breakdown spectroscopy (LIBS) is presented as a versatile and rapid analytical method for composition detection and identification of various materials. A brief review of the new trends and approaches in laser-induced plasmas analysis is made: femtosecond-LIBS, time-resolved laser induced breakdown spectroscopy (TRELIBS), filament-induced breakdown spectrometry (FIBS), laser ablation molecular isotopic spectrometry (LAMIS), femtosecond laser filaments LAMIS (F^2-LAMIS), nanoparticle enhanced laser induced breakdown spectroscopy (NELIBS), etc.

The potential of LIBS for diverse practical applications in different fields is discussed. Some results of using LIBS technique in conservation and restoration of cultural heritage monuments are demonstrated.