

Laser Ablation-Based Techniques LIBS, LA-ICP-MS/OES and LAMIS: An ideal toolbox for direct chemical analysis of solids

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Laser ablation is an important technology for direct sampling in analytical chemistry. The advantages of laser ablation for chemical analysis include direct sample characterization, no chemical procedures for dissolution which reduced the risk of contamination or sample loss, analysis of tiny samples not separable for solution analysis and, in the case of solid samples, determination of spatial distributions of elemental composition. Laser ablation is used as a sampling tool as in the case of its coupling to Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) or Inductively Coupled Plasma Spectrometry (LA-ICP-MS). Laser ablation is used also as a direct and stand-alone technique for spectroscopic analysis of the elemental emission of laser-induced plasmas, known as Laser Induced Breakdown Spectroscopy (LIBS), and the recently introduced spectroscopic analysis of molecular emission for isotopic determination, known as Laser Ablation Molecular Isotopic Spectrometry (LAMIS).

In this presentation will describe several applications on the analysis of geological samples involving the combination of two or more of these Laser Ablation-Based approaches to the chemical analysis of solid samples.