

SAIP 2011



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Laser-induced breakdown spectroscopy for monitoring heavy metals in soils

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Content :

The growing social concern for environmental protection and human health has driven widespread interest in analysis of heavy metals in the various environmental compartments including soil. Soil is unanimously considered as one of the recipients of heavy metals released by several human activities. Rapid analysis of heavy metals in soil is an important factor in modelling the effect of industrial pollution on agricultural soil. Quantification of heavy metals in natural and polluted soils is generally conducted using flame-atomic absorption spectrometry (F-AAS), graphite furnace-atomic absorption spectrometry (GF-AAS), inductively coupled plasma-optical emission spectrometry (ICP-OES) and inductively coupled plasma-mass spectrometry (ICP-MS) after appropriate sample pre-treatment. The use of laser-induced breakdown spectroscopy (LIBS) has emerged as a good alternative technique for quantitative analysis of heavy metals in environmental matrices. There is no need for pre-treatment of the sample in LIBS. Furthermore, the speed of analysis is far superior to other techniques, and the technique may be developed for in situ analysis. In this work we demonstrate the feasibility of LIBS for detection and quantification of heavy metals in soils and sediments and identify best parameters for such analysis.

Level (Hons, MSc, PhD, other)? :

PhD

Consider for a student award (Yes / No)? :

No

Short Paper :

Yes

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