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LIBS spectroscopy for urban zone pollution monitoring

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ABSTRACT:
After the invention of the first laser in 1960, the laser techniques become rapidly powerful investigation tools to bring concrete answers to various problems in quantum science and technology. Among different laser techniques the Laser induced breakdown spectroscopy (LIBS) is a technique of fast analysis of a multi-elemental compositions in various surroundings. It is a compact tool requiring only a minimal preparation of the sample (solid liquid or Gas). The LIBS Spectroscopy has many applications in several domains: environmental monitoring„ biomedical and pharmaceutical sciences, industries , military applications etc. Here we use the LIBS for the environmental monitoring (soil contamination , plant monitoring, concentration in metallic compounds). As examples the contamination of urban zone by heavy metals is considered to provide important information for population's health security. The LIBS spectroscopy allows to realize measurements of the concentration of heavy metals in soils and plants on the scale of ppb. Quantitative and qualitative LIBS measurements on barks exposed to the urban pollution are collected and analyzed, the samples of grounds polluted by the water evacuated from domestic effluents and those resulting from Industrial effluents in Dakar have been also collected and analyzed.

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