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## Using LIBS Method in Safeguards

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Laser-Induced Breakdown Spectroscopy (LIBS) is a type of atomic emission spectroscopic technique which is capable to detect almost all the elements from the periodic table in different sample types (solid, liquid or gas). Other advantage of the technique is that a LIBS analysis is much faster than a conventional laboratory technique. Beside the easy usability and fastness of the system the main advantages of the technique is that portable systems are also available. Using a so-called 'backpack' version in-field analysis can be carried out. Therefore, LIBS is a more and more popular technique also e.g. in the nuclear analytics due to its several advantages. It is also tested for Safeguards purposes as a novel technology.

In this work development and test of a portable LIBS system is discussed in detail. Detector system with higher resolution and specific software for evaluation of uranium isotope composition has been developed. Different kind of uranium fuel pellets with various enrichments was analyzed as test samples. Concerning the test measurements the developed LIBS instrument was found well-applicable for analysis of Safeguards samples and determination of higher enrichment of uranium in-field. The method is rapid and simple enough for short in-field sample analysis.

### Country or International Organization

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