

A New method for drill core geochemical analysis on site using the Scanmobile laboratory

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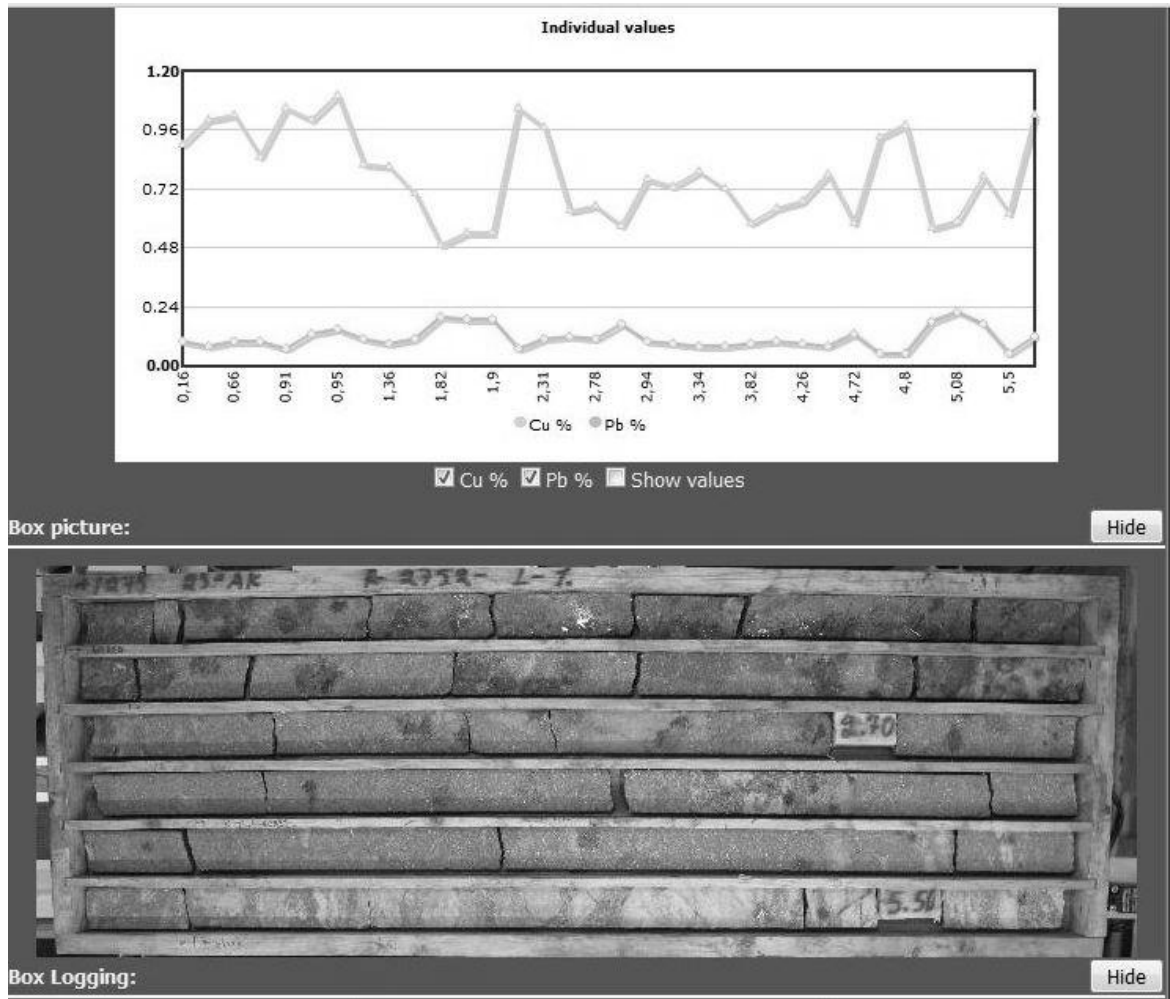
Exploration procedures are usually slow and time consuming. Drill core handling, shipping and laboratory analysis takes a long time. The cores have to be logged based on visual information, shared into two parts, shipped often to other location where sample crushing, grinding, splitting and geochemical laboratory analysis takes place. This laboratory analysis cycle takes often several months. It is on the critical path of the project. This causes delays to the final report and may prolong the the project or start of the mine. A good starting window may be lost for years.

Mine On-Line Service has developed a new mobile geochemical laboratory service; Scanmobile service, for on-site XRF (X-Ray Fluorescence) elemental analysis. (Picture 1).



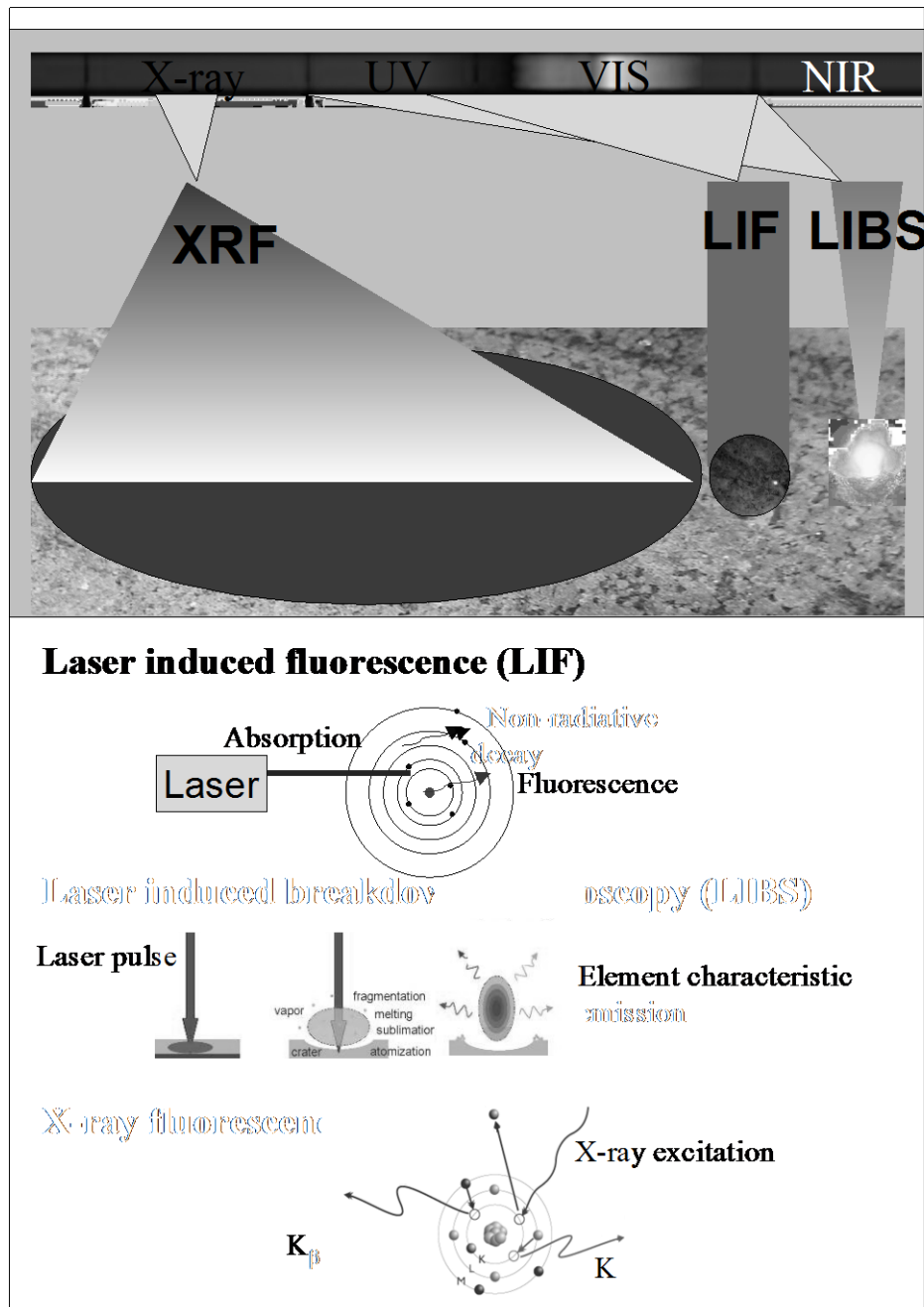
Picture 1. Scanmobile

The Scanmobile analyses cores in the box typically before they are logged. The analysis report is available on next day via internet by RemoLog™ browser. The RemoLog™ report includes elemental contents of the drill core as function of the borehole length in graphic form and in excel database. Also accurate core box photos and close up photos are included. (Picture 2.)



Picture 2. RemoLog™ reporting tool browser

The Scanmobile's standard analysis principle is XRF. The detected elements normally range from Al to Pb, but lighter and heavier elements can also be detected. The Laser based LIF (Laser Induced Fluorescence) and LIBS (Laser Induced Breakdown Spectroscopy) can also be provided for special cases. The LIF signals come from the molecule structure, causing a luminance effect. The LIF method detects minerals and rocks. The LIBS method detects the light and actually nearly all elements by vaporizing molecules, triggering a signal from the atoms. The measuring spots and basic principles are presented in the Picture 3.



Picture 3. The measuring methods

The analyzer has been calibrated for each application with known samples. The accuracy, analyzer performance and repeatability are calculated during the calibration procedure for each element. During the measurements the normal laboratory procedures are followed up.

The Scanmobile has been working on the field since December 2007. Some examples of the applications have been: gold with marker elements, calcium carbonates and oxides and low grade nickel, silver, gold, copper and zinc and apatite ores. In addition to drill cores the Scanmobile has been working on projects analyzing, drill cuttings, rock and till samples.

The Scanmobile service gives new possibilities for speeding up exploration projects. The geologist can get more certainty for logging when the element information is available visually and with the normal routines of mineral identification. The RemoLog™ browser further enables the company specialist help the logging geologist to solve any problems by

using the photos and analysis information across the Internet. When the information is readily available, the drilling plan can be changed while the drilling machines are still at work. The combination of rapid analysis on site by the Scanmobile and real time global access to data and core images by the RemoLog™ browser will change the working procedures that geologists have today. The geologist can do the logging with more information and give him/her more freedom to choose the working procedures. The new method will reduce time and money spent for exploration projects and increase the exploration company's value.