

LIBS imaging for geological samples: short review of applications

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The imaging capability of laser-induced breakdown spectroscopy (LIBS) has a high potential in various domains related to geology. This approach can be distinguished by its ease in use, multi-elemental capability, detection of light elements, fast operating speed (up to kHz), as well as operation at ambient conditions. This is furthermore the only all-optical technique providing spatially resolved elemental information at the μm -scale, a detection limit at the ppm level.

In this presentation, we will summarize the recent progress related to the implementation of LIBS imaging for the characterization of geological samples (speleothems, mine ores, precious stones, and so on). Different examples will be shown with the aim of illustrating the specificities of LIBS among other elemental imaging approaches, such as the possible coupling with optical, Raman and/or luminescence imaging, and the analysis of large-scale samples (c.f. figure 1). Some perspectives and remaining challenges will be finally proposed.

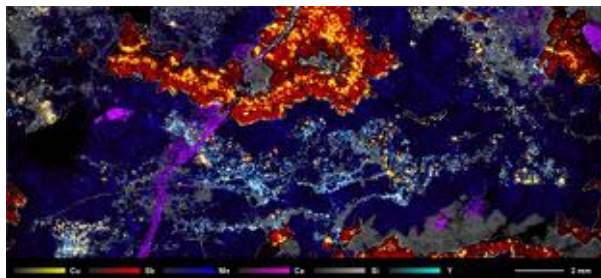


Figure 1: Example of megapixel imaging of a metallic ore sample (prepared as thin section), acquired with 10 μm lateral resolution.