


Imaging of Laser-induced Plasma

 **Sample**
Solid samples

 **Mode of analysis**
Elemental imaging

 **Interest**
Plasma

 **Measurement rate**
20 Hz

Ablation in the LIBS is a fast and dynamic process. Thanks to the imaging of the plasma, this process provides better understanding of the ablation and consecutive expansion of the plasma. Typical image of the plasma is shown on the Figure 1. With this method one can observe spatial and temporal distribution of the elements within the plasma. This can bring qualitative information and possible improvement in the analysis.

Imaging of the plasma also serves for improving the stability of the experiment. Since it has been proven, that the captured size or intensity of the plasma by a camera correlates with the LIBS signal, this method can be also used for normalization of the spectra.

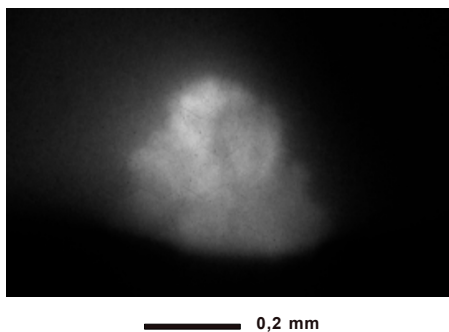


Fig.1. Characteristic image of the plasma. Acquired 800 ns after the ablation, integration time is 50 ns.

With the direct imaging of the plasma, we are able to improve precision of the calibration curve for Ni in a steel sample. (Fig. 2)

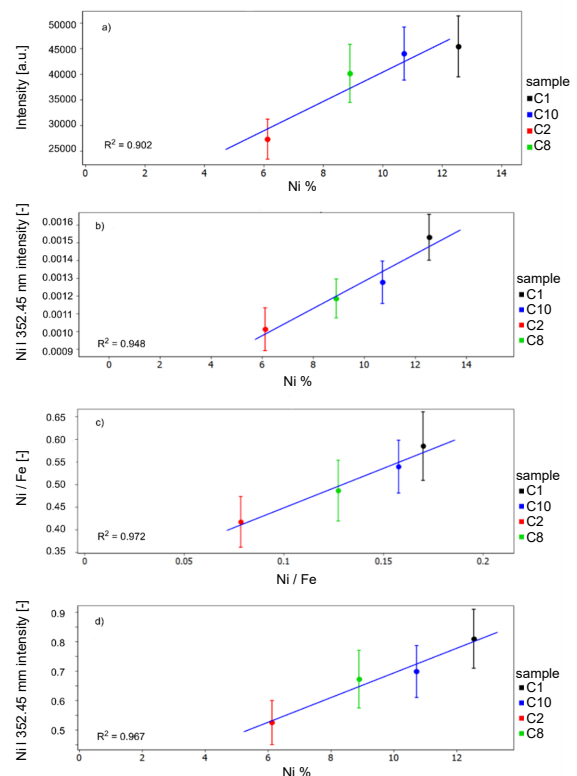


Fig.2. Calibration curves for Ni I 352.42 nm concentration in samples with a) no internal standardization, b) standardization to total emissivity, c) standardization to matrix line Fe I 404.48 nm and d) standardization to the plasma plume size. Error bars represents standard deviation of the data.