APPLICATION NOTE

LIGHTIGO

Elemental imaging of murine Teeth and Bones

TISSUES
PLASTICS
GEOLOGY
BIOLOGY
METALS
OTHERS

Sample
Murine teeth and bones

Spatial resolution
30 µm and 100 µm

Elements of interest
Ca, Mg ,Pb, Sr

Measurement rate
20 Hz

Mode of analysis
Elemental imaging

Analysis of hard tissues, teeth and bones, is an essential part of many fields such as archaeology, anthropology, forensic analysis and medical applications. The results of these analyses provide information on the age, sex, health, diet, place of origin, and migration of individuals. This information can be obtained by several analytical methods, e.g. LIBS. In our work, model samples of murine jaws and bones embedded in epoxy were used for the qualitative analysis.

The samples were from individuals that had been exposed to lead nanoparticles for varying lengths of time. Using a fast mapping of the sample with a spatial resolution of 30 and 100 µm, it was possible to obtain detailed information on the distribution of the biogenic elements. For information of the distribution of lead and strontium, mapping with a spatial resolution of 100 µm was necessary.

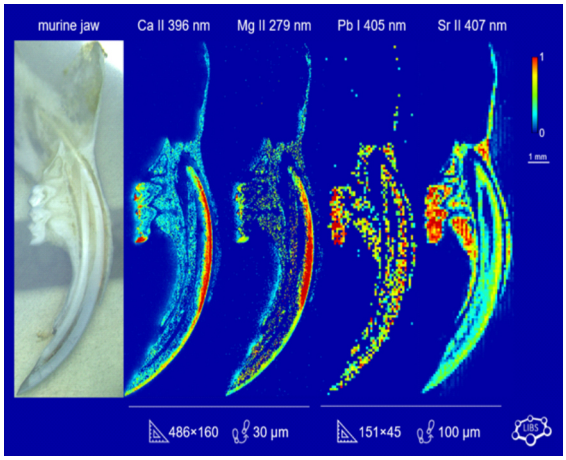

Fig.1. Results of distribution of Ca and Mg from LIBS analysis and distribution of lead and strontium from µLIBS analysis of murine jaw.

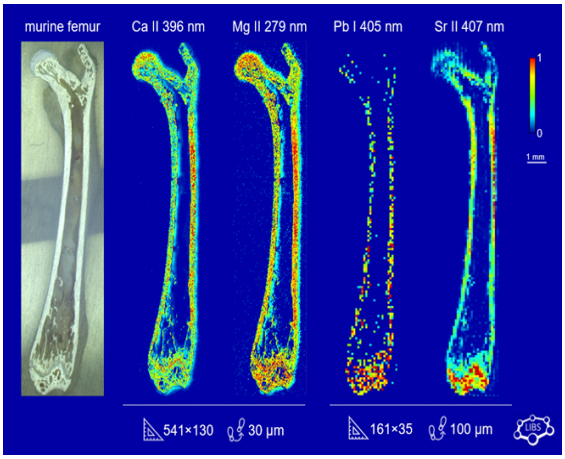

Fig.2. Results of distribution of Ca and Mg from LIBS analysis and distribution of lead and strontium from µLIBS analysis of murine femur.