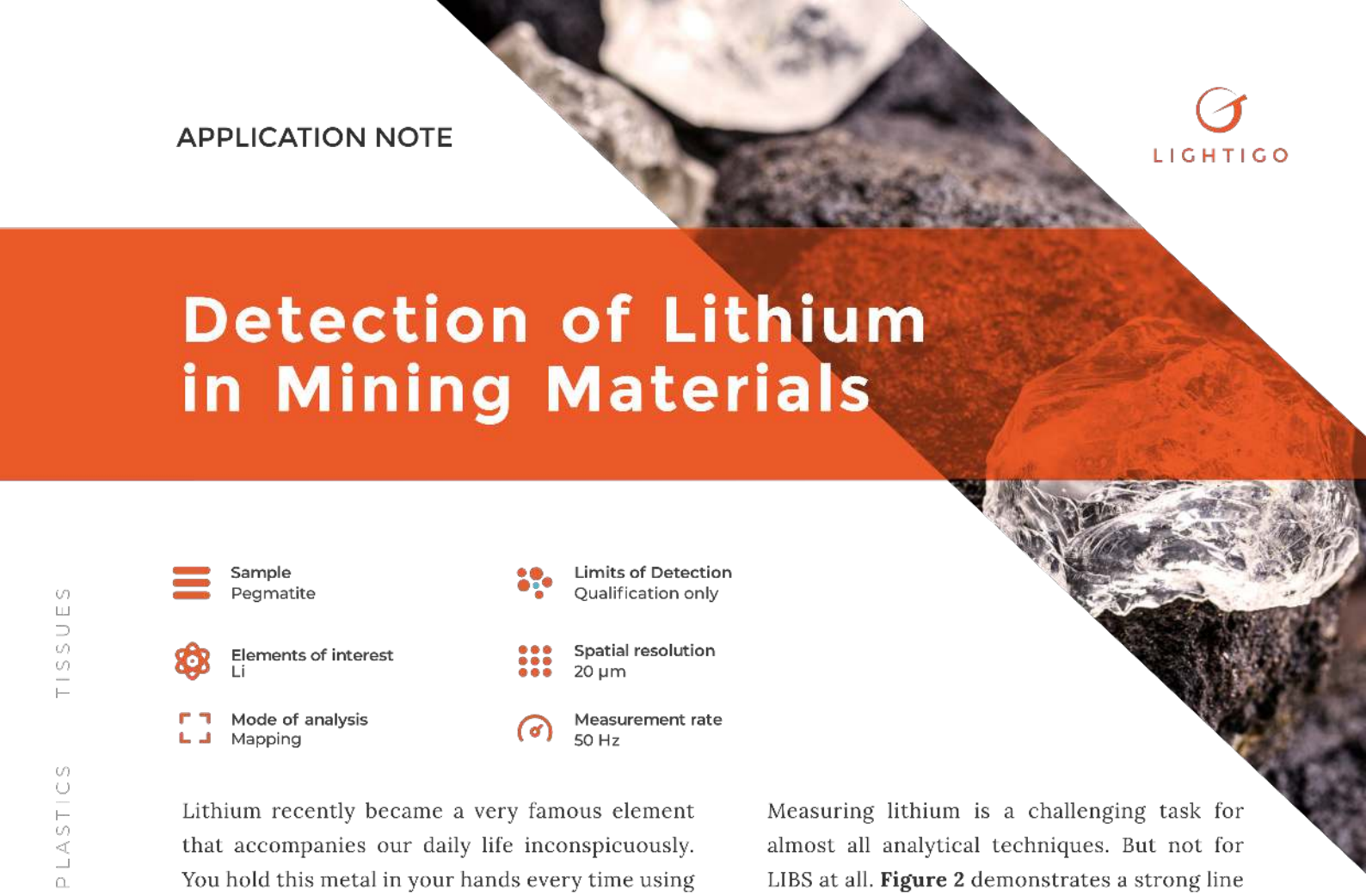
APPLICATION NOTE

LIGHTIGO

Detection of Lithium in Mining Materials



Sample
Pegmatite

Limits of Detection
Qualification only

Elements of interest
Li

Spatial resolution
20 µm

Mode of analysis
Mapping

Measurement rate
50 Hz

Lithium recently became a very famous element that accompanies our daily life inconspicuously. You hold this metal in your hands every time using your cell phone, use its magic when working on a computer or even while driving a car. It's because Li is an indispensable metal in the **electronic industry and in the production of batteries**. The demand for lithium is still growing.

Even though Li can occur in many different minerals, only a modest fraction of them is economically usable for mining. The main Li-rich minerals are lepidolite or spodumene in pegmatites (**Fig. 1**). Another necessary source of Li is brine. Here the concentration of Li can reach about units of mg/L (**Fig. 1**). The process of brine mining consists of pumping the underground water into the surface reservoirs and its spontaneous evaporation to form salt crystals.



Fig.1. Mining of Lithium from minerals such as pegmatite (left) or from brine (right).

Measuring lithium is a challenging task for almost all analytical techniques. But not for LIBS at all. **Figure 2** demonstrates a strong line of Li I 610.36 nm and Li I 670.78 nm obtained by measuring the pegmatite sample. **Figure 3** shows the spatial distribution of Li on the pegmatite surface.

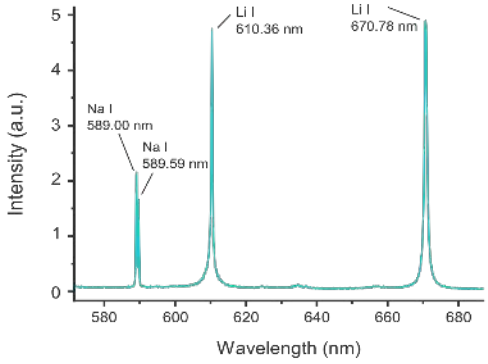


Fig.2. The emission line of Li I 610.36 and Li I 670.78 nm in pegmatite sample.

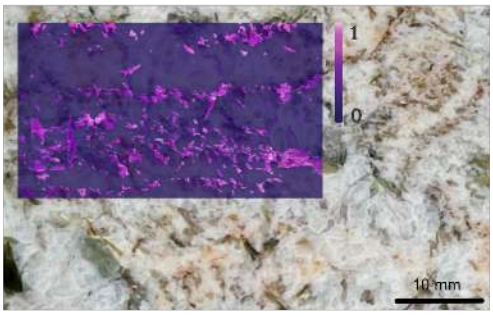


Fig.3. Distribution of lithium in pegmatite sample (Li I 670.78 nm).

OTHERS METALS BIOLOGY GEOLOGY PLASTICS TISSUES