

Report

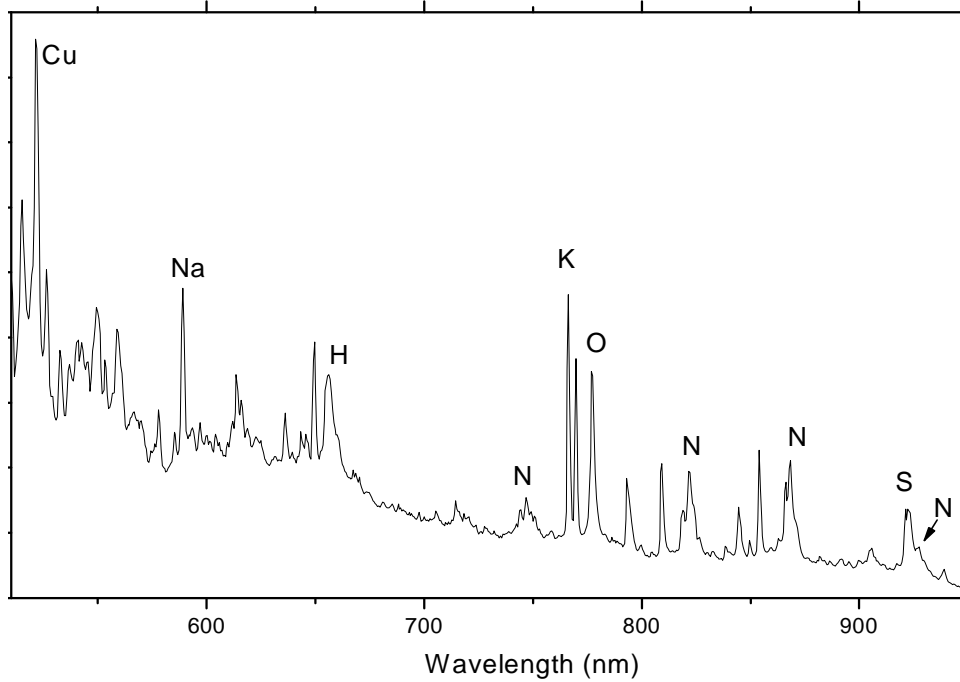
Sulfur in copper ores

Technical Task

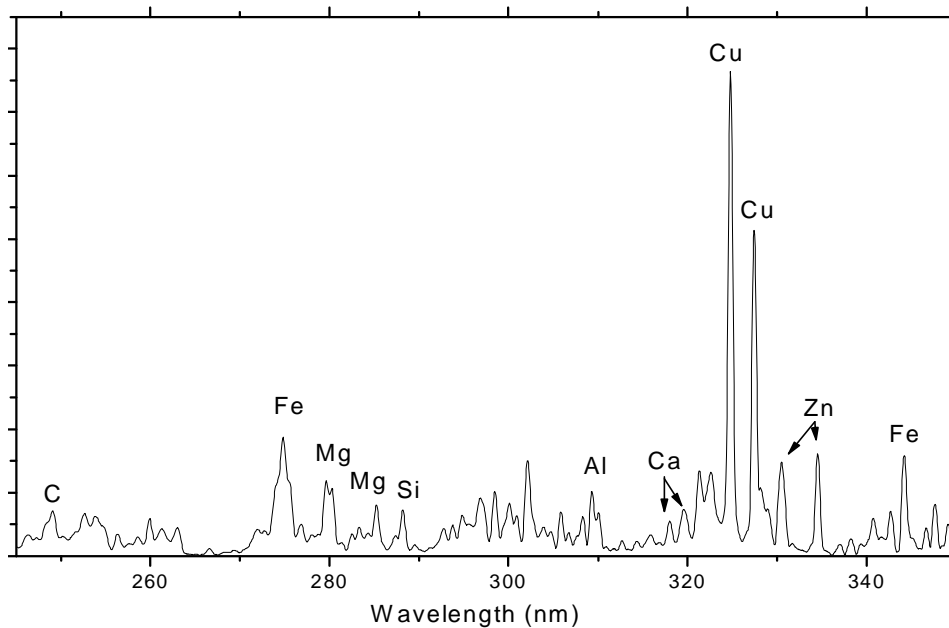
Evaluating the possibility of online, real-time analysis of S, Cu, Ca and Si containing ore.

Spectral Comparison.

Vis - IR spectra



UV Spectra



[Type text]

In additions to the required S, Cu, CaO and SiO₂, other elements such as Mg, Al, Fe, Zn, Na and K can be easily detected.

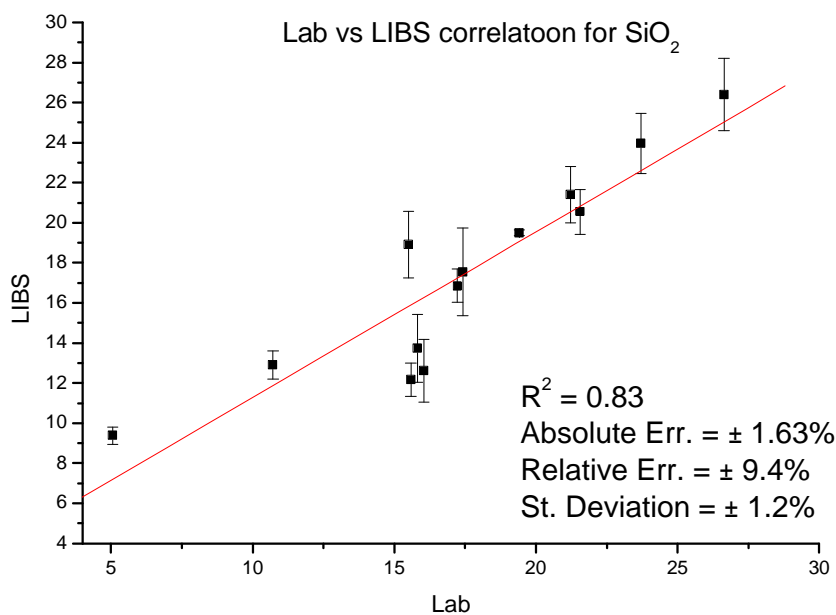
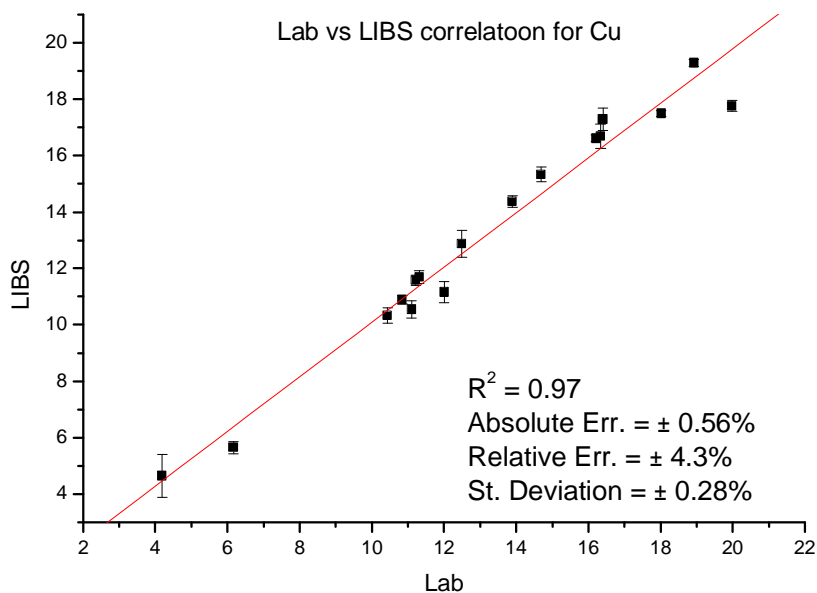
For laboratory-LIBS charts and accuracy calculation of those additional elements, their chemical analyses have to be provided.

Quantitative analytical algorithm

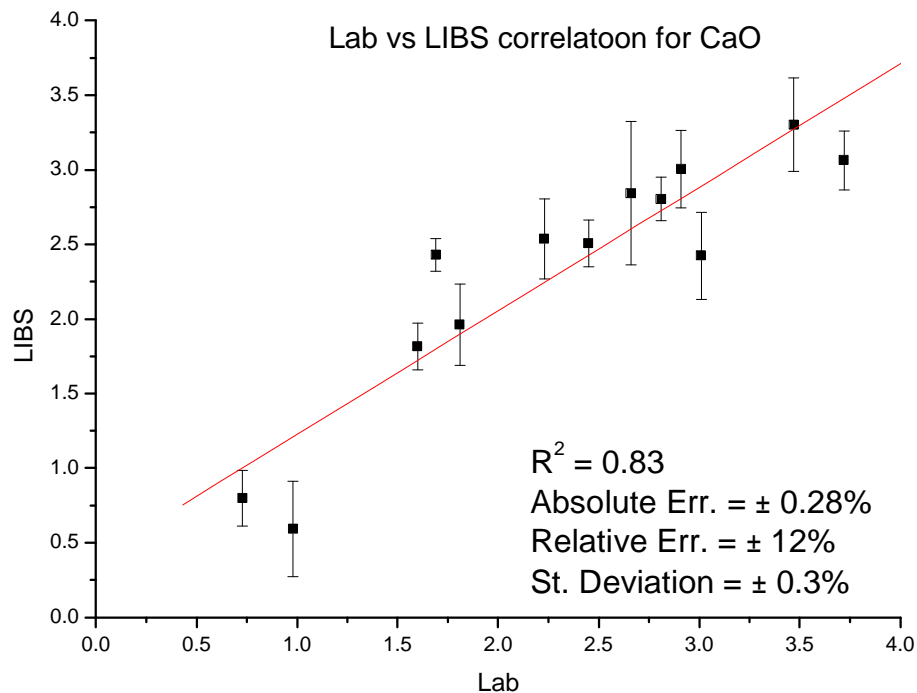
According to the received laboratory data, analytical algorithm was developed and demonstrated as correlation curves for all the analyzed elements:

(Vertical lines show standard deviation inside each measurement, indicating reproducibility.

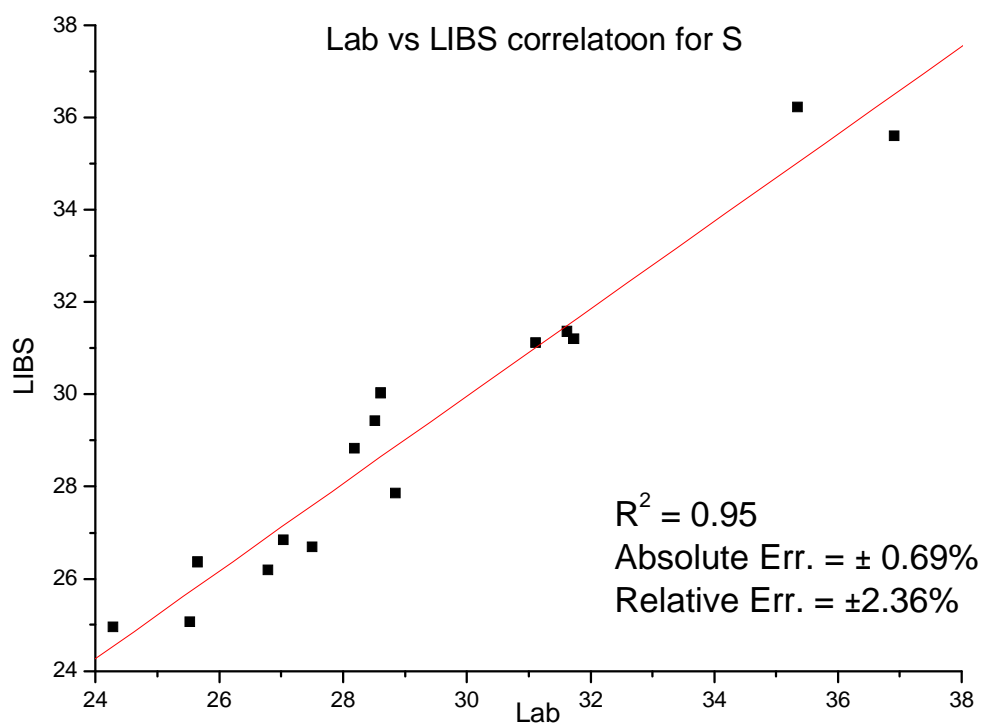
Avantes spectrometer research: Cu, SiO₂, CaO



[Type text]



Andor spectrometer research: Sulfur



(For Sulfur chart, sample #1 was removed due to its low correlation.)

Conclusions

On-line, real-time analysis of "Ural Copper Plant" ore is definitely possible.

High accuracy and reproducibility can be achieved.

In addition to the required S, Cu, CaO and SiO₂, other elements such as Mg, Al, Fe, Zn, Na and K can be easily detected.