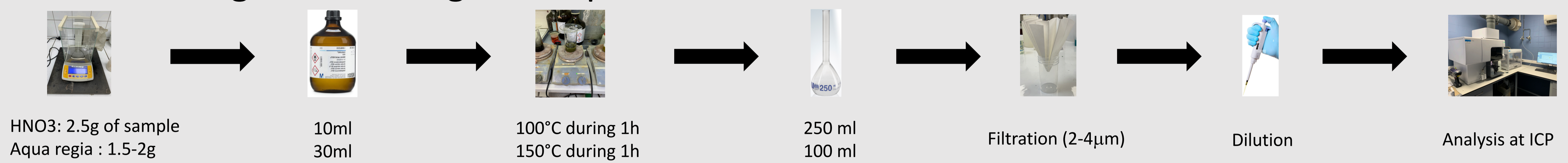


Introduction

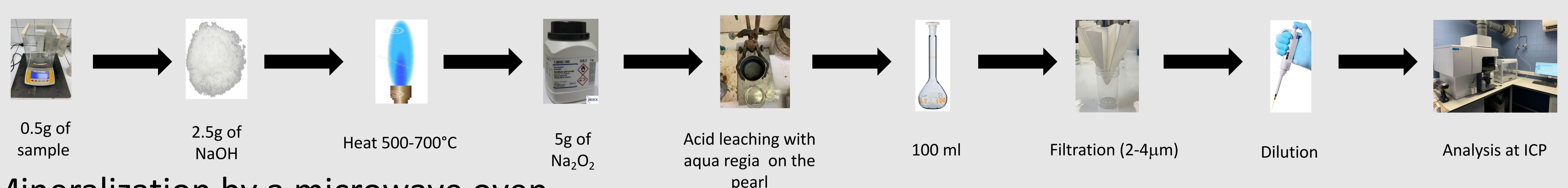
In this study, various preparation methods of a flue dust samples were compared for quantifying major elements (Cu, Pb, Zn) present in a solid matrix coming from a electronic cards. Methods are compared against each other using the results of ICP-OES analysis of the solubilized flue dust. Chloride ions will be analyzed by automatic tritator. The nature of the mineralization agent is studied (nitric acid, aqua regia or alkaline fusion) as well as the physical conditions (temperature, pressure and dwell time).

Material and Method

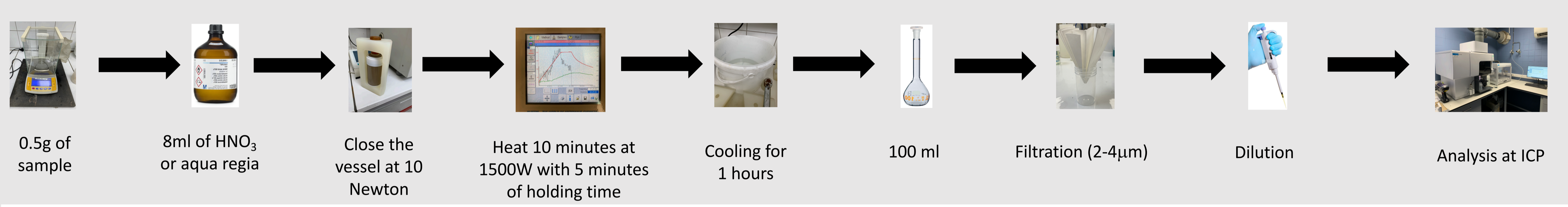
Acid leaching on a heating stirrer plate



Alkaline fusion



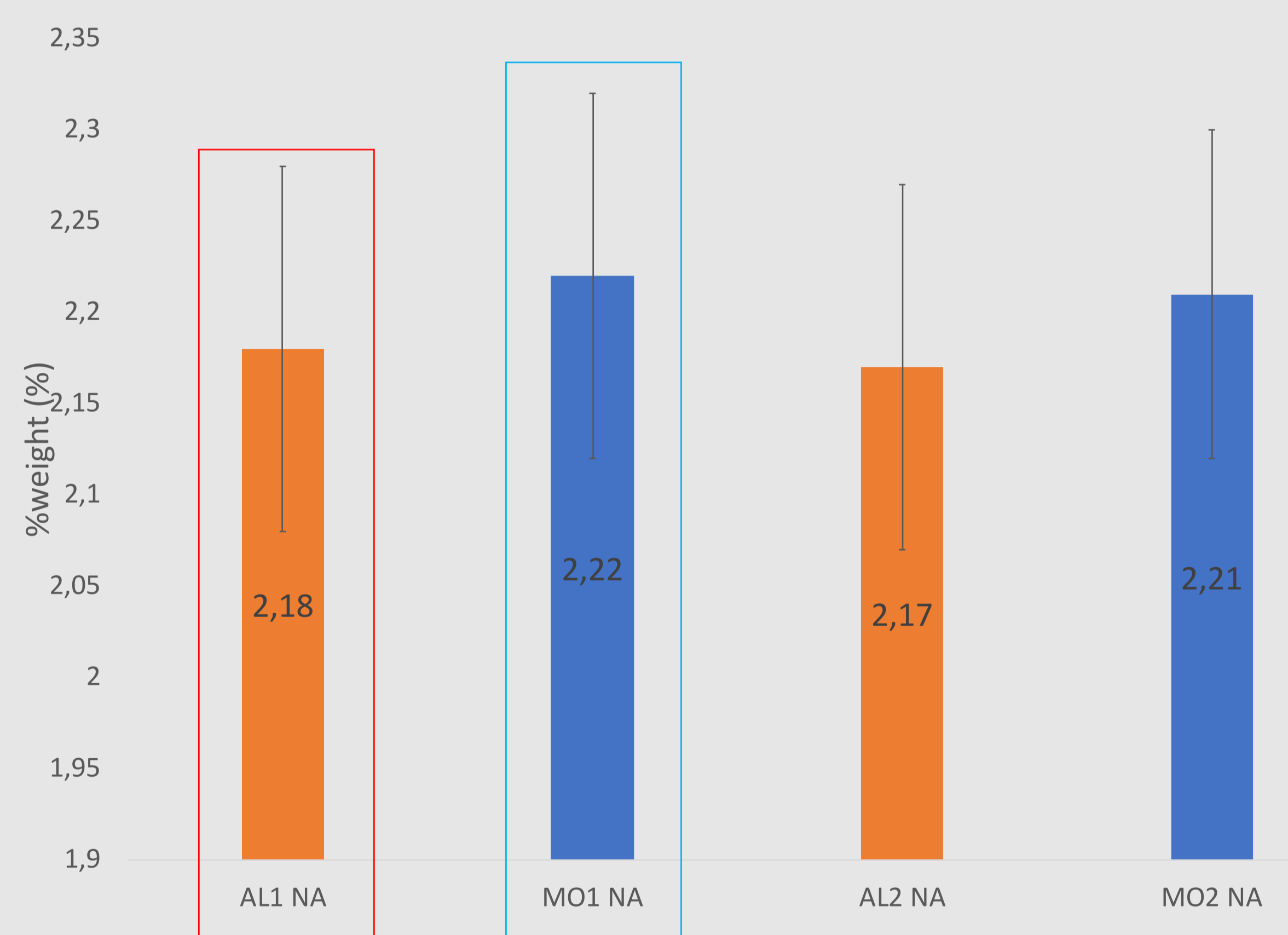
Mineralization by a microwave oven



Results of mineralization

Comparison of different mineralization methods on the chloride

Legend : Names of the samples
XXZ AA :
 XX is the method (AL = acid leaching ; MO = microwave oven ; AF = Alkaline fusion)
 Z = number of serie
 AA is the acid (NA = Nitric acid ; AR = aqua regia)



The red boxes shown on the graphs are the reference values.

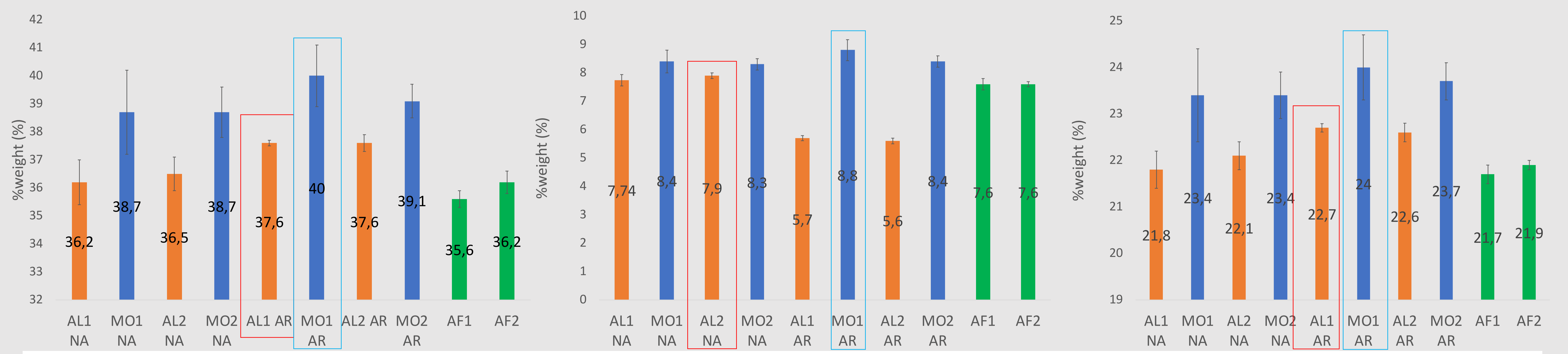
The red boxes shown on the graphs are the « best » values.

Major Elements	Copper (%w)	Lead (%w)	Zinc (%w)	Chloride (%w)
Estimate precision	0.6%	0.4%	1.0%	0.1%

Comparison of different mineralization methods on the copper

Comparison of different mineralization methods on the lead

Comparison of different mineralization methods on the zinc



Conclusion

In conclusion, the results obtained show that the preferred method is mineralisation using a microwave oven. This technique makes it possible to estimate the chloride ion, copper, lead and zinc content in a solid matrix. In order to improve the representativeness of each method, two series of 6 attacks were carried out. The estimated precision, based on repeatability tests, is less than 0.1% for chloride ions, less than 0.6% for copper, less than 0.4% for lead and less than 1% for zinc.