

# **IRON ORE ANALYSIS**

## **A NEW APPROACH FOR NEW REQUIREMENTS**

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International standards, such as the Australian ISO 9516-1 method, describe the calibration and elemental analysis of iron ore using a fusion method. The approach is based on synthetic standards uses empirical matrix correction terms. The fusion method, being an excellent tool for this application, is quite complex and benefits from advances in the fusion instrumentation with respect to temperature control and agitation. By using improved matrix correction algorithms, the difficult and very sample intensive approach of empirical corrections can be avoided. Computations also allow therefore the use of variable dilutions, a real benefit for complex iron ores.

The environmental impact of harmful substances during steel making turns the analytical process into another direction. Trace elements and volatiles are not possible to be determined accurately using a fusion based preparation. A repeatable, accurate pressed pellet preparation is readily made but has traditionally not achieved the accuracy levels needed and suffered from mineralogical matrix effects.

- How can accurate trace element analysis be obtained in a matrix which is as variable as iron ores, why not correct using “jump edge” correction?
- Can international reference materials be used to provide accurate analysis?
- Can a turnkey system be delivered to customers for the analysis of iron ore?
- What are the limitations of using the pressed powder method?
- What are the implications of matrix correction for the analysis?

In the talk we will show and discuss a novel approach, which combines the traditional fusion method results with a pressed powder pellet calibration for the analysis of traces in iron ore. The questions raised before will be answered and discussed for this linked approach.