THE QUANTITATIVE LINK – THE WAY TO BETTER RESULTS

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The value of analytical data is increased if results are not just collected, but also combined during the evaluation step. Typically the commercial value of industrial products, like cement, concentrates, minerals or metals is determined by the major and minor element concentrations. The trace element concentrations are becoming more important for regulatory reasons to avoid harmful effects on health or the environment during the later use of these products or having a commercial effect on the price of the goods. The major objective for industrial chemists and analysts is therefore to achieve more precise, more accurate results in less time without high investments.

In modern laboratories complimentary analytical techniques are widely used, each instrument delivers the optimum result for the selected parameters. Different sample preparation techniques are used to target the appropriate concentration ranges. Up to now often the results are simply stored in a laboratory database (LIMS) and combined by statistical calculations. A large potential of information is not yet used.

Including relevant information from method A during the evaluation of method B improves the quality of the results dramatically. Including values for “non XRF” elements or components into an XRF method will enable correction of matrix effects properly and produce more accurate results.

As an example: Major and minor constituents are analyzed using a fusion method for preparation, traces and volatiles are typically measured using the pressed pellet method for the same sample. Linking this information enables the use of accurate and precise concentration data for the major elements to enhance the matrix correction for traces. Modern XRF evaluation software can automatically link the results and use this information for automatic matrix correction.

For phase identification by XRD, element information and quantification from XRF can help to reduce the number of matches and increase the accuracy. Combining the resources and values already available, the results for XRF or XRD are improved by linking complimentary methods and techniques. The LINKIN approach is the integration of results with added benefit. Not intended to remove a LIMS, LINKIN functionality enables the transmission of better data into the LIMS, benefitting the whole operation and process.