
Poster-013**Correcting calibration curves for field portable XRF analysis**

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Repeated measurements of certified reference materials (CRM) is a crucial part in portable X-ray fluorescence spectrometry (pXRF), in particular if the pXRF tool does not allow a self-calibration of the instrument by the user. To improve the quality of pXRF data, to attain the data quality obtained by conventional wet-chemistry, CRMs are measured at the start, during and at the end of each short-term measuring campaign. Subsequently, pXRF data are corrected via regression analysis based on certified values. In this study, the standards MP-1b-966(1) and RTS-3a(2, 3) (packed & loose) as well as Granite AC-E(4) were analysed using a Bruker S1 Titan instrument. Repeated analyses reveal a certain drift of measured values for almost all elements over only four weeks. While a slight scattering of values along a flat running regression curve is common, a distinct sharp step in the long-term curve progression, as shown by Al1, 3-4, Si1-4, Sn1, and Zr4 occurs over several days. However, only few elements of the same CRM show this behavior. Elements like Al2-3, Ca1-3, Cu1, K4, Mg3, S1-3 and Si1-4, show a distinct positive or negative gradient in regression curves over time in some CRMs (gradient $>2.0 \cdot 10^{-4}$). Many elements show a slight, but lasting increase (e.g. Cr4, Cu3-4, K3, Ti1-2) or decrease (e.g. Cr2-3, Cu2, K1-2, Mn2) of nominal values with time or an inverse behavior can be observed depending on the applied pXRF modes (e.g. Mg2, Mn3-4, Ti3, Zr1). In addition, some nominal values are invariant even after more than 250 analyses (e.g. Mn1, Rb2-3, Ti4, V2-4, Zr2-3) but some elements show very unsteady runs (e.g. Al4, Rb4, Sn1, Zr4). All trends are independent of the level of concentration. However, trends are more pronounced if elements are of high(er) concentration. Therefore, it is necessary to observe the element trends of CMRs in order to ensure comparable and good corrected analytical values of pXRF analysis.