



## **Spectral Interferences Manganese (Mn) - Europium (Eu) Lines in X-Ray Fluorescence Spectrometry Spectrum**

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X-ray fluorescence (XRF) spectrometry is widely used for quantitative and semi quantitative analysis of many major, minor and trace elements in geological samples. Some advantages of the XRF method are; non-destructive sample preparation, applicability for powder, solid, paste and liquid samples and simple spectrum that are independent from chemical state. On the other hand, there are some disadvantages of the XRF methods such as poor sensitivity for low atomic number elements, matrix effect (physical matrix effects, such as fine versus coarse grain materials, may impact XRF performance) and interference effect (the spectral lines of elements may overlap distorting results for one or more elements). Especially, spectral interferences are very significant factors for accurate results.

In this study, semi-quantitative analyzed manganese (II) oxide (MnO, 99.99%) was examined. Samples were pelleted and analyzed with XRF spectrometry (Bruker S8 Tiger). Unexpected peaks were obtained at the side of the major Mn peaks. Although sample does not contain Eu element, in results 0,3%  $\text{Eu}_2\text{O}_3$  was observed. These result can occur high concentration of MnO and proximity of Mn and Eu lines. It can be eliminated by using correction equation or Mn concentration can confirm with other methods (such as Atomic absorption spectroscopy).

**Keywords:** Spectral Interferences; Manganese (Mn); Europium (Eu); X-Ray Fluorescence Spectrometry Spectrum.