



Method of XRF Measurement of Geological Rock and Comparative Study between the MPI-DING Glass Standard and Natural Volcanic Glass

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Abstract: Using the X-ray fluorescence Spectrometer (XRF) method and electron probe micro-analyzer (EPMA) measure the major elements of natural rock samples (rock powder or a single mineral or volcanic glass) during a period of time or within a period of a stable data comparison, which will effectively improve the accuracy of the data, as well as the long-term laboratory data quality monitoring and evaluation (Guilherme et al., 2008; Tertian et al., 1982). In this study, we establish XRF method to analysis the geological rocks, and use the EPMA in-situ measurement of the MPI-DING standard glasses, through comparison the data, we evaluate the homogeneity of standards, on the other hand, we compared the glass standards with the natural volcanic glass from mid-ocean ridge if east pacific rise, finally we explore the synthetic difference natural volcanic glass and homogeneity. In this study, we got the following conclusions.

1. The establishment of X-ray fluorescence spectrometry (XRF) glass melting tablets and powder tablet experimental methods, measured seventeen national standards, one rock standard, a soil standard and five USGS standards (Kocman, 1991). By comparison study of analysis accuracy and producibility of data. We indicate, through a long-term data monitoring, that the quantitative analysis of major element composition of natural rock samples by using X-ray fluorescence methods is perfect, Good data quality, in terms of accuracy or precision and reproducibility of the data, can be achieved. The data have reached the minimum request level of scientific research.

2. The determination of the international MPI-DING glass standard by using the electron microprobe (EMPA), comparing with the recommended values and other laboratory data, we suggest that the data of analyzed accuracy and precision is perfect. The results of the mearment show the synthetic glass composition is uniform and homogeneity.

3. The EMPA determination of uniformity and regularity mid-ocean ridge volcanic glass from the high Si to low Si content samples, through comparing major elements of the international

standard glasses and natural mid ocean ridge volcanic glasses (Klaus et al., 2011). In this study, it come to a conclusion that the prepared standard glass homogeneity is better than the natural glasses, we can further obtain that the international standard synthetic standard glass when compared with natural volcanic glass sample, there is a smaller gap between the data from both standard and natural glasses, thus the average fluctuation value of the standard glasses is smaller, and better stability, thus we suggst that the international standard synthetic glasses are more homogeneity than natural volcanic glasses.

Keywords: XRF, EPMA, MPI-DING, Mid-ocean ridge glass, homogeneity

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