Akurasi wavelenght?dispersive X-Ray fluorescense

H. Widyatmoko, author

Abstrak

X-ray Fuorescence spectrometry semakin sering digunakan dalam bidang geokimia. X-Fuorescence spectrometry dikategorikan menjadi dua yakni ? WDXRF (wavelenght ? dispersive X- ray fluorescence spectrometer) dan EDXRF (energy-dispersive X ? ray fluorescence spectrometer). WDXRF dapat berbentuk sebagai sequential spectrometer, simultaneous spectrometer atau kelebihan dari kelebihan keduanya dikombinasikan menjadi satu perangkat yakni hibrid instrument. Masing-masing instrumen XFA mempunyai karakteristika dan kekhusussan dalam penggunaan. Penelitian ini menggunakan sequential spectrometer PW 1450 untuk menganalisis major, minor and trace elements dalam sample. Untuk mengkalibrasi PW 1450 digunakan 30 standar internasional dan 66 standar dari Institut für Mineralogie der Uni. Köln, Germany, yang telah diketahui konsentrasi masing-masing unsurnya. Interelement dan matrix effects dihilangkan dengan cara mencocokkan matrix pada sample dan standar, pengenceran, penambahan konsentrasi unsur-unsur yang dimaksud dalam jumlah tertentu, dan koreksi secara matematik pada saat analisis sedang berlangsung. Ujicoba pada dua sampel dan deskripsi statistik dengan standard deviation dan coefficient of variant menunjukkan bahwa XFA cukup akurat untuk beberapa unsur terutama unsur mayor, tetapi untuk Mg, Ca, K, Na, P, S, Co, Rb, Zn, Ni, Ba, Pb sensivitasnya masih lebih rendah dibandingkan dengan Atomic Absorpsion Spectrometry (AAS), Flame Emission Spectrometer (FES), Inductively Coupled Plasma (ICP) dan photometer.

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Wavelenght?Dispersive X-Ray Flourescence Accuration. X-Fuorescence spectrometry is a method, which is increasingly applied in the geochemical analysis. X-Fuorescence spectrometry is classified under two categories ? WDXRF (wavelenght ? dispersive X-ray fluorescence spectrometer) and EDXRF (energy-dispersive X ? ray fluorescence spectrometer). WDXRF can be configured as a sequential spectrometer , a simultaneous spectrometer or a hibrid instrument, which combines the advantages of the simultaneous and sequential spectrometers into one instrument. Each instrument is different in some characteristics, and each has applications for which it is specifically suited. In this investigation sequential spectrometer PW 1450 was used to analyze the major, minor and trace elements in the samples. The standards used in calibrating the PW 1450 for the analysis of all samples are materials of known composition (30 internatioanal standards and 66 standards from Institut für Mineralogie der Uni. Köln, Germany). Interelement and matrix effects are treated by matrix matching of samples and standards, dilution, preconcentration of the element of interest, and mathematic corrections during data analysis. The examination of two samples and the statistic description using standard deviation and coefficient of variant show that the XFA is accurate enaugh for many elements, especially for the major elements, but for Mg, Ca, K, Na, P, S, Co, Rb, Zn, Ni, Ba, Pb in comparison with Atomic Absorpsion Spectrometry (AAS), Flame Emission Spectrometer (FES), Inductively Coupled Plasma (ICP) and photometer it is less sensitive. It is posible to devaluate the errors by using coefficient of variant and standard deviation.