Analysis of Matrix Absorption Effects for Fe via WDXRF and EDXRF

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Abstract. In the present work, the matrix effects in X-ray fluorescence analyses have been investigated for Fe using both EDXRF (energy dispersive X ray fluorescence) and WDXRF (wave length dispersive X ray fluorescence). The absorption matrix effects of Fe element have been obtained and these effects have been corrected using appropriate correction methods.

All the samples which were prepared appropriately for measurements have been pressed using a Spex (Cat. B25) pressing machine to form pellet samples. These samples have been analyzed in EDXRF and WDXRF spectrometers. In the present study, the $K\alpha$ X ray fluorescence spectra of Fe have been analyzed in all samples. The characteristic spectra of Fe have been obtained by transferring the data obtained from these systems in to demo version of OriginPro 7.5 computer program. Consequently, these data were then used to obtain the absorption effects curves for $K\alpha$ lines of Fe and the matrix corrections have been done using an appropriate method.

The obtained results have been evaluated statistically. Moreover, the use of different techniques have been compared using the obtained results since two different system (EDXRF and WDXRF) have been used in the study.

Keywords: Matrix effect, absorption, enhancement, WDXRF, EDXRF.