

ABSTRACT

M. Sc. Thesis

X-RAY FLUORESCENCE TRACE ANALYSIS OF FELDSPAR ORES PRODUCED IN MENDERES MASSIVE

Mustafa KARAMAN

Adnan Menderes University
Graduate School of Natural and Applied Sciences
Department of Chemistry

Supervisor: Prof. Dr. A. Ersin KARAGÖZLER

The most important and high-quality feldspar deposits are found in western Anatolia, especially in Çine-Milas-Yatağan-Bozdoğan district.

In this study, the composition together with the trace element content of the samples of feldspar deposits taken from different sites in Menderes Massive are documented.

For this purpose, feldspar samples collected from 20 different sites were grinded for homogenization and mixed with a certain amount of binder prior to pressing to obtain pellets. Pellets were analyzed with energy dispersive X-ray fluorescence spectrometers. Three measurements were made for each sample.

The mass percent of 41 elements/compounds found in samples, although all of which were not found in all of the samples analyzed, were quantified with the use of a dedicated software known as fundamental parameter, which corrects individual peak intensities for matrix effects.

The results were analyzed with the use of advanced multivariate statistical methods, as well as with relatively simple exploratory data analysis of various tables and graph constructed from original data sets. Thus, which elements are present or absent and which elements are of high concentrations with respect to sample sites were explored.

The data set were then statistically analyzed by principal component analysis method to characterize the relations between element concentrations and distributions of elements in sampling regions. The similarities between sampling sites and also of various elements were then demonstrated through hierarchical clustering.

2009, 98 Pages

Key Words:

Albite, PEDXRF, geological samples, fundamental parameter, matrix effect, principal component analysis, hierarchical cluster analysis

