Abstract

The Phosphate ore usually exhibit impurities such as carbonates, silicates, and organic matter as well as some chemical elements such as uranium which is a harmful by-product and need to be removed. Considering these facts, chemical typology of the ores and their distributions within the deposit must be identified so as to be taken into account during exploitation processes and to adopt the most appropriate method for ore enrichment. In the Djemi Djema phosphate deposit which is part of the mining field of Djebel Onk basin, chemical typology has been carried out using univariate and multivariate statistical methods on chemical data (P₂O₅, CO₂, CaO, MgO, Fe₂O₃, SiO₂, RI and U) of whole rock samples collected from the drilling cores during the assessment stage. Within the deposit, four main phosphate ore types have been identified and, on the basis of this typology, the exogangue of the ores has been determined. The relationship between uranium and other chemical elements as well as its distribution within the ore types reveal that, in three types of the ores, uranium is concentrated mainly in the phosphate matter whereas in the fourth, the uranium is concentrated in exogangue.

Keywords: Chemistry; Eastern Algeria; Enrichment; Exploitation; Impurities; Phosphates; Pollution; Statistics; Typology; Uranium