

Mineralogical Characteristics of Phosphates from the Djebel Onk Deposits: Treatment and Valorization of Co-Products

Authors : Samira Tlili, Amina Grairia, Sihem Benayache, Saida Bouyegh, Sabrina Ladjama, Abdelmoumen Guedri

Abstract : Phosphorites from Djebel Onk Tebessa/Algeria deposit contain a CaO of 50-52 wt. % and P₂O₅ level of ≥ 30.20 wt. %. The microstructure revealed using a spectroscopy electronic microscope (SEM) consists of phosphate granules with an ovular form. In this investigation, we have identified phosphate with varying particle sizes using mineralogical methods. The phosphogypsum formed by the mineralization of natural phosphate has also been discovered. This co-product was formed during the attack on natural phosphates by sulfuric acid. This study demonstrated the effectiveness of the thermoanalytical technique of differential scanning calorimetry (DSC), X-ray diffraction, and EDS/MEB analysis. FTIR analyses also validated the identification of mineral phases with the observation of bands from structural phosphate groups.

Keywords : phosphate, Djebel Onk deposit, mineralogy, valorization, phosphogypsum

Conference Title : ICMMSSE 2025 : International Conference on Metallurgy, Materials Science and Engineering

Conference Location : Paris, France

Conference Dates : January 30-31, 2025