World Academy of Science, Engineering and Technology
International Journal of Geological and Environmental Engineering
Vol:18, No:12, 2024

Geochemistry of the Visadar Serpentinites, Northwest of Iran

Authors : Masoud Shahsavari, Ali Haj-Abolfath, Javav Izadyar, Mohammad Ebrahimi

Abstract : Paleozoic (Carboniferous-Permian) metamorphic rocks comprise the Shafa Rud metamorphic complex, the oldest known metamorphic phase in the Visadar region. It is located in a portion of the Alborz-Talesh Mountain range in northwest of Iran. In the base region of the Shafa Rud metamorphic complex, eclogites are found as several-meter-thick lenses accompanied by serpentinized masses. Based on petrographic observations and X-ray diffraction (XRD) examination, the principal and primary phase compositions were determined to be lizardite, antigorite, and chrysotile; minor minerals linked to serpentinite included calcite, magnetite, and chrome spinel. The chemical composition of significant oxides, rare earth elements, and trace elements extracted from depleted harzburgite peridotites exhibit characteristics indicative of subduction-related serpentinites found in the Visadar serpentines. In regions where sections of the upper mantle have been obducted onto continental crust and maintained inside orogenic zones, serpentinites are hydrothermally ultramafic rocks. Because of their unique geochemical fingerprints and mineralogical compositions, serpentinites are of global interest and have significant geological significance. This study aims to document the processes associated with the formation of serpentinites and enhance our understanding of the geochemical and mineralogical environments in the Visadar region.

Keywords : shafa rud, visadar region, serpentinite, XRD, geochemical, mineralogical
Conference Title : ICGG 2024 : International Conference on Geology and Geophysics
Conference Location : Istanbul, Türkiye
Conference Dates : December 23-24, 2024