

## **Alteration geochemistry of the volcanic-hosted Dedeninyurdu, Yergen and Fındıklıyar Cu-Fe mineralization, Northern part of Gökçedoğan Village, Çorum-Kargı Region, Turkey: Implications for the rare earth elements geochemical characteristics**

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This study deals with the rare earth element (REE) geochemical behavior the alteration zones associated with the volcanic-hosted Cu-Feminalization at the northern part of Gökçedoğan village, Çorum-Kargı region (N Turkey) which are Dedeninyurdu, Yergen and Fındıklıyar mineralization. The study area comprises Bekirli Formation, Saraycık Formation, Beşpınar Formation, and Ilgaz Formation. Saraycık Formation consists of Upper Cretaceous Kargı Ophiolites, pelagic limestone, siltstone, chert and spilitic volcanic rocks. Fe-Cu mineralization occurred in the spilitic volcanic rocks of Saraycık Formation representing the host rock and is related with the silicification and sericitization alteration zones. Dedeninyurdu and Yergen mineralization zone directed nearly N75-80°E following structural a line but Fındıklıyar mineralization zone has nearly NW direction. The ore mineralogy in these zones include pyrite, chalcopyrite, covellite, hematite with malachite, goethite and a limonite as a result of oxidation. The geochemical characteristics of REE of the least altered spilitic basalt show flat light and heavy REE with slight positive Eu- and Sr-anomalies according to their chondrite-, N-type MORB, and primitive mantle-normalized REE patterns. While the REE geochemical features of the altered rocks collected from the different alteration zones show that there are negative Eu and Sr anomalies as a result of leaching during the alteration processes. There are positive and negative correlations between K<sub>2</sub>O index with LREE and HREE, respectively. This is due to the additions of K and La during the alteration processes referring to the pervasive sericitization alteration is the responsible for the Cu-Fe mineralization at the study area.

**Keywords:** Cu-Fe mineralization, Spilitic volcanic rocks, alteration, Rare earth elements (REE) geochemistry.