

Study of Rare Earth Element (REE) Potentials in Highly Altered Tuffs Occurring in the Davraz Mountain Region, Isparta (Southwest Turkey),* *Murat Budakoglu, M. Sezai Kırıkoglu, Ali Tugcan Unluer, Zeynep Doner, and Huseyin Kocaturk, Department of Geological Engineering, Faculty of Mines, Istanbul Technical University, Istanbul, Turkey; and Amr Abdelnasser, Department of Geology, Faculty of Science, Benha University, Benha, Egypt*

In this study, we investigate the potential in situ enrichment of rare earth elements (REE) in highly altered alkaline tuffs located in the Davraz Mountain district of Isparta, southwest Turkey. The highly altered tuffs in this region are related to the Quaternary Golcuk Volcano located in the Isparta region. This volcano is an example of the well-known postcollisional, Afyon-Isparta potassic-ultrapotassic volcanic province in southwestern Turkey. The volcano consists augite-trachytes, porphyry trachytes, and tephriphonolite dikes that are formed in several eruptive cycles. Pyroclastic occurrences of this volcano can be observed in various locations beneath the Isparta angle. The tuffs in our study field can be described as mafic crystal metatuffs, which predominantly consist of plagioclase with actinolite, clinopyroxene, hornblende, K-feldspar, and quartz set in a microcrystalline tuffaceous matrix of microcrystalline aggregates of kaolinized and sericitized feldspar, tremolite-actinolite, biotite, quartz, and dusty iron oxide. The results indicate high values for the light REE (LREE) elements such as La (350–400 ppm), Ce (600–650 ppm), and Sc (70–80 ppm), as well as relatively high values for Th (70–80 ppm). The average LREE content of samples is ~1,200 ppm. These results are compatible with the samples from the Golcuk Caldera in terms of LREE (La and Ce values of 400–500 ppm and 500–600 ppm, respectively).

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