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LREE Enrichments of Altered Alkaline Pyroclastics at Kuyubasi Region Burdur, SW Turkey

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ABSTRACT

In the Kuyubasi region of Burdur, Bucak district, Inner Isparta Apex, SW Anatolia, Turkey, the investigation carried out for the potential in-situ enrichments of REE in highly altered alkaline tuffs originated from Golcuk volcano. This volcano is the most significant product of the widely known post collisional, Afyon-Isparta potassic-ultrapotassic volcanic province in southwestern Turkey. Partial melting of oceanic crust and subcontinental lithospheric mantle resulted in the formation of florocarbonates and pyrochlore group minerals which are responsible for the LREE enrichment in Golcuk volcanics. These extrusive rocks are mainly trachyandesites, augite-trachytes, porphyry trachytes and tephriphonolite dikes which are formed in several eruptive cycles. Pyroclastics from the last eruptions can be encountered in various locations beneath the Isparta apex. The pyroclastics in study area described as mafic crystal metatuffs which predominantly consist of calcic-plagioclase with clinopyroxene, K-feldspar, and quartz set in a hyalo-microcrystalline tuffaceous matrix of microcrystalline aggregates of kaolinized and sericitized feldspar, biotite, chlorite, quartz, and dusty iron oxide. The results indicate high values for the LREE elements such as La (251-369 ppm), Ce (412-660 ppm), Sc (45-48 ppm). The average ΣREE content of samples are 1012 ppm. These results are compatible with the samples from Golcuk Caldera which is located 30 km north of study area in terms of LREE contents (La and Ce values are 400-500 ppm and 500-600 ppm respectively).

Key words: Rare earth elements (REE), Pyroclastic occurrences, Bucak region, Burdur, Southwest Turkey

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