Geochemical Characteristic of Felsic Dykes Within the Karakaya (Kaymaz) Granite Eskişehir, Turkey

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Karakaya (Kaymaz) granite is exposed to the east of Eskişehir City within the Sakarya Continent at eastern part of northwest of Anatolia. Karakaya granite has holocrystalline granular texture and mainly composed of quartz, orthoclase, oligoclase, biotite, tourmaline, ± allanite, ± zircon [1]. Karakaya granite covers an area of 16 km^2 as NW-SE trending semi elliptical shaped and cut by felsic dykes with direction of N10-35W [2].

Felsic dykes have myrmekitic and graphic textures are in composition of alkali feldspar granite and granophyr. Evolution of geochemistry of host rocks and felsic dykes indicates continuous trend between felsic dykes and their host rocks. This trend suggested the differentiation products of same magma resource for felsic dykes and host rocks.

ORG normalized elemental patterns of felsic dykes reveal enrichment with Large Ione Lithophile Elements with respect to High Field Strength Elements. Besides, chondrite normalized elemental patterns of Rare Earth Elements show prominent enrichment of Light Rare Earth Elements with respect to Heavy Rare Earth Elements.

REE characteristics of felsic dykes are calculated as $(La/Yb)_N$: 17.47–17.51, $(Eu/Eu^*)_N$: 0.63–0.77, $(La/Sm)_N$: 11.85–12.41 and $(Sm/Yb)_N$: 1.413–1.47.

High LREE/HREE values and all the field geology, petrography and geochemical data reveal that the felsic dykes are the residual melts of the mixed felsic and mafic products of mantle signature crustal source magma.

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[1] Gullu B.&Kadıoglu Y.K. (2010) Karakaya (Eskişehir) Granite" ISSN 1556-4800 GSA, p.43 [2] Gullu B. (2013) Phd thesis (unpublised), AU, 243 p.

Water Geochemistry of the Thermal Waters in the Eastern Black Sea Section (Ordu, Rize and Artvin), Turkey

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Eastern Black Sea Section is characterized by a magmatic arc developed in the Cretaceous- Tertiary. Thrust faults, strike-slip faults and normal faults are formed in the region. Accordingly, in the area strike-slip faults, trending NE-SW direction, creates lines for thermal water outlets. Sarmaşık (Fatsa-Ordu), Ayder (Çamlıhemşin- Rize), Ilıcaköy (İkizdere-Rize) and Ilıca (Şavşat- Artvin) thermal waters, discharging from along these faults and fractures, are located in the region.

Temperature of Sarmaşık and Ilıca thermal springs, discharging from basaltic and andesitic rocks are 48°C and 38°C respectively. Thermal well waters temperature in the Ayder and İkizdere areas are 57°C and 63°C respectively. In the study area pH values are between 6.32- 8.92, EC values are between 200- 8463 μS/cm, TDS values are between 130-5500 mg/l. The Na-HCO_3 thermal waters of Ayder, İkizdere and Ilıca are Peripheral waters. Sarmaşık thermal waters, which is classified as Na-Ca-Mg-SO_4 are Steam heated waters. While thermal waters of Ayder and İkizdere are Immature Waters, Sarmaşık and Ilıca thermal waters are Partially Mature Waters. The thermal waters of Ayder and Sarmaşık are undersaturated with respect to gypsum, amorphous silica, calcite, aragonite and dolomite, but İkizdere and Ilıca thermal waters are oversaturated with respect to calcite, aragonite and dolomite.

The concentration values of trace element Rb, Cs and Li vary in thermal waters of four regions. Ilıca thermal waters has the highest trace element concentration. Ayder thermal water are not affected by water-rock chemistry, compared with rare elements of rock and waters. In the Sarmaşık, İkizdere and Ilıca area water chemistry is similar to the rock chemistry according to rare elements content. Based on their stable isotope contents waters are meteoric in origin. Ilıica and İkizdere thermal waters have a more positive values of $\delta^{18}O$ due to water-rock interaction.

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