

## **Petrology and Geochemistry of Pyroclastic Flow and Phreatomagmatic Deposits in Gölcük Area, Isparta**

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Alkali potassic-ultra potassic magmatism occurs in Gölcük area, Isparta according to the post collisional extensional tectonic process from late Miocene to Pliocene and Quaternary. The formation of volcanism can be divided three main stages: (1) ancient trachytic lavas/domes, (2) initial pyroclastic flow deposits and tephriphonolite lava flows that located at the rim of the crater (3) pyroclastic flow deposits, tuff ring deposits, phreatomagmatic deposits and young domes.

Pumice samples, collected from pyroclastic flow deposits and phreatomagmatic deposits of Gölcük area, consists of plagioclase (vary from andesine to oligoclase, normally zoned with calcic cores and more sodic rims), clinopyroxene (vary from diopside to augite and commonly zoned), amphibole (magnesian hastingsite), biotite majorly. Oxides and apatites are the accessory phases. Pyroclastic flow deposits and phreatomagmatic deposits exhibit alkaline major oxide trend with composition range in trachyte-trachyandesite ( $\text{SiO}_2=60-70\%$ ). The geochemical data show that all the samples are potassium rich. These samples are also contain high amount of LILE and LREE relative to HREE. The abundances of LREE and HREE are variable ( $\text{La}_N=400-700$  and  $\text{Yb}_N=8-11$ ). LREE/HREE ratios ( $\text{La}_N/\text{Yb}_N=50-65$ ) imply that they can be derived from a source which is enriched in LREE. The MORB normalized patterns have shown that samples are enriched in Ba, Sr, K and Rb relative to Nb and Ti. This is the significant characteristics of island-arc magmas ( $\text{Ba}/\text{Nb} > 30$ ).

**Keywords:** Gölcük, pyroclastic deposits, geochemistry, pumice