

Petrography and petrology of the Göloba (Balya-Balıkesir) pluton, NW Turkey: Post-collisional magmatism

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Tertiary magmatism is widespread in Biga peninsula (NW Turkey). The studied Göloba pluton is located in Sakarya zone of 25 km northenwest of Balya (Balıkesir). Northerneast-southernwest trending the Göloba pluton covers an area of approximately 12 km² with an ellipsoidal outcrop pattern. The pluton has generally syenogranite, monzogranite and rarely quartzsiyenite composition. The Göloba pluton show madium-grained, poikilitic, pertitic and graphic textures. It contain plagioglase, orthoclase, quartz, biotite, hornblende and, accessory minerals are zircon, sphene and apatite.

Geochemically, major and trace element variations diagrams can be attributed to the importance of fractional crystallisation which was mainly controlled by plagioclase and hornblende. The ratios of %SiO₂ are between 66 to 78, 3.9-5.6 % K₂O, 3.0-3.8 % Na₂O, and Mg# is between 7 to 17. Primitive mantle normalized spider diagrams of granitic samples exhibit significant enrichments in large-ion lithophile elements (LILEs); as well as depletion of high field strength elements (HFSE). Chondrite-normalized rare-earth element patterns of the samples are concave upwards with low- to-medium enrichment. The calk-alkaline Göloba pluton has high-K series and volcanic-arc granitoids. I-type pluton is peraluminous with ratio of A/CNK > 1. The pluton was derived from crustal materials. According to whole-rock geochemical data suggest magma generation by dehydration melting of lower crustal component after the collision.

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