

PETROLOGY OF THE KURANCALI PHLOGOPITIC METAGABBRO: AN ISLAND ARC-TYPE OPHIOLITIC SLIVER IN THE CENTRAL ANATOLIAN CRYSTALLINE COMPLEX

F. Toksoy-Koksal*, **M.C. Goncüoğlu*** and **M.K. Yalınız****

* *METU, Dept. Geol. Eng., 06531, Ankara, Turkey*

** *Celal Bayar Univ., Dept. Civil Eng., Manisa, Turkey*

ABSTRACT

In the Central Anatolian Crystalline Complex (CACC), besides the ophiolitic bodies with more or less recognisable sequence and preserved magmatic pseudostratigraphy, there are many massive and layered gabbroic masses occurring as isolated outcrops. Most of these mafic rocks were interpreted as dismembered parts of an allochthonous ophiolitic assemblage (Yalınız et al, 2000), derived from the northerly located Izmir-Ankara branch of the Alpine Neotethys. An overall supra-subduction zone genesis has been envisaged for the Central Anatolian Ocean (CAO). However, remarkable differences in the geochemical characteristics of different isolated outcrops suggest differences in the source areas and tectonic settings within the intra-oceanic subduction zone. One of these gabbro units, the Kurancali Metagabbro, occurs as an isolated body in the central part of CACC. It is thrust along a steep south vergent thrust-plane onto the uppermost units of the Central Anatolian Metamorphics (CAM). The main body of the Kurancali Metagabbro is characterised by a distinct compositional layering. The layered gabbros are represented by pyroxene and hornblende gabbros. Phlogopite-rich plagioclase-hornblende gabbro occurs mainly as pegmatitic dikes intruding the layered gabbro sequence. The layered gabbros in general consist mainly of diopsidic augites, brown hornblendes, plagioclase. Secondary phases are phlogopitic mica, brownish green horn-

blende replacing clinopyroxenes, and fibrous greenish actinolitic hornblende partially or completely replacing brown hornblende. The primary dark micas display phlogopitic composition within the range of annite_{30.13-42.60} and phlogopite_{69.9-57.4}. The analysed pyroxenes are diopsidic (En_{32.3}Fs_{18.5}Wo_{49.1} - En_{34.9}Fs_{17.9}Wo_{48.2}). The whole-rock geochemistry of the gabbros indicates the presence of two distinct groups of rocks; a subordinate group of phlogopite gabbro with island arc calc-alkaline affinity and a dominating layered gabbro sequence with island arc tholeiite characteristics. They are extremely enriched in LIL elements, indicative of an alkaline metasomatism in the source region and they display geochemical features of transitional back arc basin basalts (BABB)/island arc basalts (IAB)- and IAB-type oceanic crust. Based on their geochemical similarities with modern island arc basements, we suggest that the Kurancali Metagabbro may represent the basement of an initial island arc, generated in a supra-subduction zone setting within the Izmir-Ankara branch of Neotethys.

REFERENCE

Yalınız M.K., Floyd P.A and Goncüoğlu M.C. Petrology and geotectonic significance of plagiogranite of the Sunkaraman Ophiolite central Anatolia, Turkey. *Ofioliti*, 25, 2000, 31-37.

