



Fragments of a Tethyan ophiolite on Chios Island, Aegean Sea, Greece: first petrographical and mineral chemical data

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Ophiolites and ophiolitic fragments have been studied in the Eastern Mediterranean region since several decades (Robertson 2002), however, little attention has been paid to ultramafic rocks from the southeastern part of Chios, a Greek island located in the eastern Aegean Sea only few kilometers west of the Turkish Karaburun peninsula. In previous publications serpentinites (Besenecker et al. 1968) and serpentinitized peridotites (Zanchi et al. 2003) were mentioned from a narrow area of southeast Chios. In the course of this study, we found within a non-metamorphosed sedimentary succession small tectonic lenses of two types of mafic rocks, which have not been described so far. Here we present first petrographical and mineral chemical data for the mafic rocks and for the serpentinitized peridotites from the southeast of Chios Island.

The mafic rocks of Type I consist of calcic amphibole (pargasite and magnesiohornblende) and strongly sericitized plagioclase feldspar. Minor components are recrystallized albite (An1-3) as well as titanite, apatite, FeTi-oxides and epidote. Furthermore, homogeneous Ca-rich almandine occurs close to felsic veins. The mafic rocks of Type II are mainly composed of relatively fresh calcic pargasitic amphibole crystals with sizes up to 1 cm. Accessory phases are titanite, apatite, FeTi-oxides, and some strongly sericitized plagioclase feldspar. The peridotite is strongly serpentinitized. Minor phases are Cr-spinel and strongly altered pyroxene. The Cr-spinels from the peridotite are homogeneous with Mg-number ranging from 69 to 78 and Cr-number ranging from 13 to 20, clearly indicating mid-ocean ridge character.

The mafic rocks of Type I are of basaltic composition. Type II was probably derived from a cumulate gabbro. Both rock types underwent amphibolite facies metamorphism. The precise age of the mafic-ultramafic rocks is unknown and their affiliation to

Palaeo- or Neotethyan ophiolitic fragments is uncertain. The serpentized peridotites were considered by Zanchi et al. (2003) as olistoliths assigned to the Carboniferous from the Lower Unit of Chios Island but this is unlikely, because petrographical, mineral chemical and field data suggest that the mafic-ultramafic rocks from southeast Chios are fragments of an ophiolitic melange emplaced to their present-day location in late Mesozoic to Cenozoic times. The mafic-ultramafic rocks could be correlated to the ophiolitic suite from the neighbouring island of Lesbos where similar rocks with mid-ocean ridge character occur (see Pe-Piper et al. 2001; Migiros et al. 2000). A relation to ophiolitic fragments within the Izmir-Ankara Zone further east (e.g. Bornova Melange), where serpentinites and mafic rocks in a matrix of sandstones and mudstones crop out (Erdogan 1990), could also be possible. However, only geochronological data will help to clarify the tectonostratigraphic affiliation of the mafic-ultramafic rocks from the southeast of Chios Island.

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