

**FLUID INCLUSIONS FROM BLUESCHIST-FACIES BOUDIN STRUCTURES
WITHIN THE PHYLLITE-QUARTZITE UNIT OF THE EXTERNAL HELLENIDES,
GREECE**

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The Phyllite-Quartzite Unit, exposed in the southernmost part of the Mani peninsula, occurs between the medium-grade metamorphosed Plattenkalk Unit and the low-grade metamorphosed Tripolitza Unit. The unit contains blueschists arranged as boudins which are surrounded by chloritoid-bearing micaschists. HP/LT metamorphism resulted from subduction of the Adriatic plate beneath the Eurasian plate during Eocene time.

On micro-scale, blueschist boudins contain the mineral assemblage glaucophane + chloritoid + phengite + quartz. The surrounding rocks consist of chloritoid + phengite + paragonite + chlorite + quartz. On the basis of Mg/Fe distribution, mineral chemical analysis of chloritoid indicates a prograde growth. Chloritoid porphyroblasts show an internal earlier foliation S1 (D1) and locally pseudomorphic transformations to phengite and chlorite that are accompanied with SSW-directed shearing (D2). D2 is responsible for the penetrative foliation S2.

The post-peak P-T evolution of the Phyllite-Quartzite Unit has been identified by fluid inclusions in boudin structures (sample PM 14) and quartz filled necks (sample PM10). PM 14 consists of recrystallized fine-grained quartz grains (≤ 0.8 mm) and euhedral Mg-dolomite grains (≤ 1.2 mm). PM10 consists of coarse grained quartz (> 3 mm) without Mg-dolomite. Fluid inclusions (FIs) in PM 14 are restricted along intragranular fluid inclusion planes, whereas in PM 10 FIs are arranged as clusters and along intragranular fluid inclusion planes. Both samples are dominated by aqueous saline FIs, predominantly with halite daughter crystals. FIs occur up to 3-phase (S, L, V) at room temperature and indicate on basis of T_e and Raman spectroscopy the chemical system H_2O -NaCl- $CaCl_2$. Last melting of ice (T_m) of about $-49^\circ C$ occurs earlier than last melting of hydrohalite, which coincides well with respective low-temperature Raman spectroscopy. Salinity composition is about 36 mass% NaCl and 17 mass% $CaCl_2$. Total salinity based on halite solubility lies between 40 and 50 mass%. Different homogenisation temperatures of FIs between samples PM 14 and PM 10 allow a subdivision of their density range into 1.13 to 1.19 and 1.17 to 1.24 g/cm³, respectively.

Peak temperatures from blueschists of about 550 °C point to maximum conditions for formation of quartz filled necks (PM 10) between 7 and 9 kbar. Lower densities from the boudin structure (PM 14) between 5.5 and 7.5 kbar indicate conditions for quartz recrystallization accompanied with fluid density re-equilibration during exhumation.