

SECONDARY CHLORITE IN THE METADOLERITE DIKES OF THE FRIDO UNIT (SOUTHERN APENNINES – ITALY)

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In the Pollino Ridge (Calabria-Lucania border zone) the ophiolitic rocks of the Frido Unit are cross-cutted by metadolerite dikes showing different types of textures (intersertal, blastophitic and locally cataclastic to mylonitic, Sansone et al., 2011).

The metadolerites dikes have been affected by ocean-floor metamorphism under amphibolite to greenschists facies conditions (Sansone et al., 2012b). Further subduction, involving metamorphism under blueschist facies conditions affected the rocks during the formation of the Pollino Ridge (Sansone et al., 2012b).

This study focused on the different features of the chlorite minerals occurring in the metadolerite dikes. The relict igneous minerals are plagioclase and clinopyroxene. Metamorphic minerals are chlorite, green amphibole, quartz, white mica and the brown amphibole. Accessory phases are opaque minerals, Fe-hydroxides, zircon, and spinel. Metadolerites are commonly cutted by veins filled with metamorphic minerals including pumpellyite, chlorite, prehnite, albite, tremolite/actinolite, white mica, quartz, calcite, epidote, lawsonite, glaucophane, and chrysotile, which occur with various combinations within the same veins (Sansone et al., 2011; Sansone and Rizzo, 2012). The veins show a brittle and ductile deformation and are straight, a few millimetres thick, and are isolated or in closely spaced sets.

Chlorite is generally retained as forming during alteration of primary minerals. In the metadolerites, different varieties of chlorite are observed:

- 1) fan-felt-radiated aggregates, sometimes over-growing on clinopyroxene;
- 2) chlorite flakes or tabular show an undulose extinction, replacing amphibole, and occurring at the core of textural sites near blue amphibole rimming brown amphibole. Pale-green amphibole may form pseudomorphs after clinopyroxene together with chlorite and white mica;
- 3) felt-radiated aggregates or flakes filling veins;
- 4) pseudomorph on the plagioclase crystals associated to pumpellyite, prehnite and epidote with fine-grained aggregates.

Chlorite is classified according with Hey's nomenclature (1954) as a clinochlore and pycnochlorite as revealed by EMPA characterisation. Chlorite compositions from blueschists facies, compared with the chlorites from the greenschist facies, where the $Al/(Al + Fe + Mg + Mn)$ ratio ranges between 0.35 and 0.40 (Brown 1967; Cooper 1972), are characterized by $Al/(Al + Fe + Mg + Mn)$ ratio (0.28-0.31). Finally the occurrence of the chlorite + clinopyroxene in textural sites with the brown - green and blue-amphibole testify the crystallization under blueschist facies of the metadolerite dikes in the Pollino Ridge.

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