

The metaigneous rocks range from hornblenditic gabbros to minor quartzdiorites; they include small bodies of parashists (garnet-chloritoid micaschists). Dykes, mainly of felsic composition, cut both the metagabbros and the micaschists.

Relics of the original magmatic minerals are brown hornblende and rare clinopyroxene; primary plagioclase and biotite are completely replaced by high pressure-low temperature minerals of early-Alpine age; zoisite  $\pm$  white mica develops after plagioclase, and garnet + rutile  $\pm$  white mica  $\pm$  Mg-chlorite after biotite; glaucophane and colourless amphibole partly replace hornblende.

In the associated parashists a new garnet overgrows large pre-Alpine garnets, and the original biotites are replaced by pseudomorphs consisting of Mg-chlorite, small garnets and sagenite.

Comparison of the Bossola rocks with the well known metabasic masses of Corio and Monastero (southern Sesia-Lanzo Zone) shows that they are very close in mineralogy and bulk chemistry, suggesting a common origin from pre-Alpine intrusives.

J. DESMONS \*, R. O'NEIL \*\* - *Stable isotope measurements on minerals from eclogites and other rocks from the north-eastern Sesia zone.*

Minerals from 13 eclogites, glaucophanites and glaucophane schists collected in the north-eastern Sesia zone have been investigated for  $O^{18}/O^{16}$  (quartz, rutile, Napyroxene, glaucophane, phengite, chlorite), and D/H isotopes (phengite and glaucophane). The values of  $\delta O^{18}$  are rather homogeneous. Also there is no reversal in the order of  $O^{18}$  enrichment in coexistent minerals. It thus seems that the minerals under study have crystallized at similar temperatures, and perhaps also in equilibrium with a same pervasive fluid. The  $\delta O^{18}$  values are slightly higher in the minerals from an eclogite enclosed in marble, suggesting that the marble has to a certain extent been more impermeable to the circulation of fluids at the time of the recrystallization. All  $\delta O^{18}$  values are uncommonly high in comparison with those previously obtained on eclogitic from the world.

The temperatures inferred from both quartz-rutile and quartz-muscovite pairs average to 540° C and are also fairly homogeneous. An identical temperature value has been obtained from the partition coefficient of  $Fe^{2+}$  to Mg in coexistent garnet and clinopyroxene (Desmons and Ghent, this Genova meeting). This temperature is close to the maximum temperature allowed by the petrologic data, because chloritoid, not staurolite, is stably present in some of the rocks of this part of the Sesia zone.

The  $\delta D$  fractionation values in phengite show a small deviation from their average, also indicating a crystallization under equilibrium conditions. They fall in the range of values commonly obtained in rocks.

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J. DESMONS \*, D. GHENT \*\* - *Chemistry, zonation and distribution coefficients of elements in eclogitic minerals from the north-eastern Sesia zone.*

Minerals from rocks in eclogitic and glaucophanic facies have been analyzed by wet classical method or microprobe.

Garnets from eclogites are richer in pyrope component, and some garnets from schists

are especially rich in almandine. Garnets from eclogitic lenses included in marbles contain more grossularite component. The comparison of microprobe data, from which no andradite end-member has been calculated, and wet chemistry data shows that oxidized iron is present in both eclogites and schists, but almost absent in orthogneisses and meta-pegmatitic rocks. The common zonation pattern is bell-shaped for Mn (and Ca), and bowl-shaped for Fe, some garnets from eclogitic rocks show a reversed zonation pattern.

Two generations of garnet have been identified in some schists, the second one forming small grains, or rims around big previous grains; garnets of the first generation are Mg-poorer and Ca-richer than the second ones.

No correlation has been found between the iron to magnesium ratio in the host rock and in the garnet, although the bulk composition of glaucopanites appears to contain more iron than that of eclogites.

Na-pyroxenes from both eclogites and schists are omphacite, whereas those from orthogneiss, «inzigite», and meta-pegmatitic rocks are jadeite. In the schists they are somewhat richer in aegyrine component. The zonation is limited (jadeite content slightly increasing towards the rim), irregular or absent.

Analyzed Na-amphiboles are all pure glaucophane, sometimes with a faint increase in Fe, and decrease in Mg, towards the rims.

Calculated from the wet chemical analyses only, where the partition between  $Fe^{2+}$  and  $Fe^{3+}$  is known, the average value of  $K_D \frac{Fe^{2+}}{Mg} \frac{gr}{pyr}$  would correspond, according to the curve of Raheim and Green (1975), to a temperature of 540° C with  $P = 12$  kb for  $Jd_{50}Di_{50}$ , or 550° C and  $P = 16.5$  kb for  $Jd_{100}$ . These temperature values are in accordance with those obtained by stable isotope analysis (see Desmons and O'Neil, this Genova meeting). However, the values show some scattering, perhaps indicating lack of complete re-equilibration.

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R. COMPAGNONI, L. FIORA - *The Passo Gallarino Complex: an eclogitized slice of layered intrusive complex in the Monviso metaophiolites (Western Alps).*

A subhorizontal slab of alternating metagabbros and eclogites (about  $1500 \times 500 \times 100$  meters) outcrops at Passo Gallarino in the southern portion of the Monviso ophiolitic massif. The slab consists of repeated layers of metagabbros and eclogites, with minor chloromelanites, glaucophanites and rare quartz-zircon-bearing leucocratic layers. It is overlain by foliated serpentinites; a tectonic contact, marked by a thin layer of phyllitic calcschists («calcescisti»), divides the slab from the prasinites of the underlying Viso Mozzo Unit.

In spite of a superimposed mylonitic structure the primary plutonic character of the sequence is still recognizable because of the widespread occurrence, in all rock types, of centimeter-sized chloromelanite crystals pseudomorphically replacing magmatic clinopyroxenes.

The metamorphic history observed in the Passo Gallarino Complex is very similar to the polyphase evolution described for the Ligurian meta-ophiolites and particularly for the Voltri Group eclogites: an «eclogitic» event, which produced chloromelanite-garnet-