

e/o diffrattometria a cristallo singolo secondo le caratteristiche e la qualità del materiale a disposizione.

Sulla ludwigite di Corcolle e sulla vonsenite di Le Carcarelle (purtroppo i campioni disponibili con composizione meno vicina a quella degli end-members non presentano cristalli singoli di buona qualità per la diffrazione) sono stati effettuati raffinamenti strutturali ($R = 0.025$ e $R = 0.020$ rispettivamente), che hanno permesso un più approfondito esame della distribuzione dei cationi metallici nei siti ottaedrici. Vengono discusse le relazioni fra composizione chimica e parametri geometrico-strutturali.

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BONIN B.* - *Petrological and geochemical aspects of the evolution of Evisa peralkaline complex (Corsica)*

Among the Permo-Triassic alkaline plutonic ring-complexes of Corsica, the most famous is perhaps the peralkaline complex of Evisa. Yielding an age of 245 m.yr. (Permo-Triassic boundary), it displays several cross cutting granitic intrusions. The first one is peraluminous (subsolvus biotite granite) but the others are more and more strongly peralkaline (agpaïitic index $Na + K/Al$ up to 1.25 with the presence of normative sodium disilicate): six cupolas, composed of hypersolvus arfvedsonite granite, are earlier than and some are intruded by a large body of albitic arfvedsonite-aegirine granite. They are surrounded or cut by spectacular dyke swarms (dolerites and peralkaline «paisanites»). At its northern part, Evisa peralkaline complex is intruded by another peralkaline massif, the Triassic Cinto-Bonifatto plutonic-volcanic cauldron.

The main concern when studying this complex is to discriminate between magmatic parageneses and post-magmatic mineralogical resettings. Modal data on light minerals and major element data are likely to represent magmatic features whereas dark minerals as well as Zr-bearing minerals have been proved to be highly sensitive to subsolidus reequilibrations.

Locally, strong fenitization processes around peralkaline dykes, inducing the crystallization of Ti-Zn enriched aegirine and arfvedsonite in a peraluminous biotite granite, evidence Na, Fe and F-rich hydrothermal fluids. Comparisons of fenitization-induced parageneses and granitic peralkaline mineralogical assemblage suggest that the whole complex has suffered a more intense subsolidus metasomatism by cognate hydrothermal fluids. Alteration processes are marked by removal of early prismatic zircon and late-stage precipitation of miarolitic elpidite and/or octahedral zircon, complete low-temperature super-ordering of alkali feldspars (maximum microcline and low albite) and incorporation of Li and F (no Cl) into arfvedsonite. Chemical zonations in arfvedsonite-riebeckite crystal and trace element data substantiate the role of F-rich hydrous mantle-derived fluids, carrying Na, Li, Fe, Ti, Mn, Sr, Th, HREE,...

These phenomena result in a complete Sr isotopic rehomogenization (initial ratio of 0.703).

The alkaline granitic series is composed of a metaluminous stock, followed by a peralkaline trend and a peraluminous one: the evolutions of their major and trace elements as well as isotopes display strongly contrasting behaviours, indicating different fluid compositions and/or thermodynamic conditions.

The question why the peraluminous trend is predominating in Corsica as well as in the Western Mediterranean province and why peralkaline complexes are restricted only to the latest magmatic events of this province remain unsolved and subjected to speculations.

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BORIANI A.*, CAIRONI V.*, ODDONE M.,
VANNUCCI R.*** - *Petrology and geochemistry of the Baveno-Mottarone and Montorfano plutonic bodies***

The Baveno-Mottarone and Montorfano plutons are late-post Hercynian multiple intrusions, consisting of various granite types distinguished on the basis of their mutual relationships and composition.

The analysed samples may be divided into the following main groups: in the Montorfano stock the main white medium grained biotite granite (Mn) rarely hornblende bearing and the «green granite» of Mergozzo

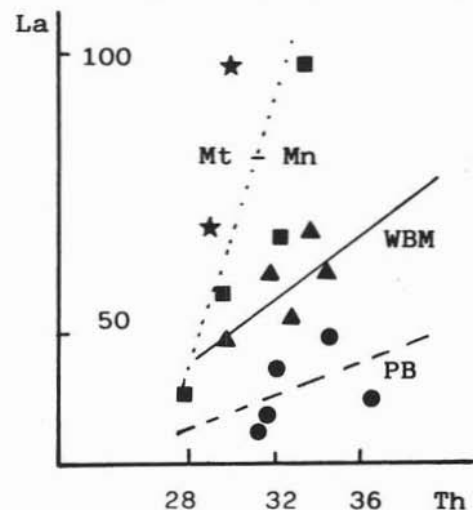


Fig. 1

(Mr); in the Baveno-Mottarone pluton the Mottarone granodiorite (Mt), a white medium grained biotite granite (WBM) and the pink miarolitic granite of Baveno (PB).

Major element chemistry suggests a calcalkaline affinity for most of the intrusions (Mn, Mr, Mt, WBM), whilst the pink Baveno granite, in spite of the intense late-post magmatic alteration, shows an aluminous alkaline character.

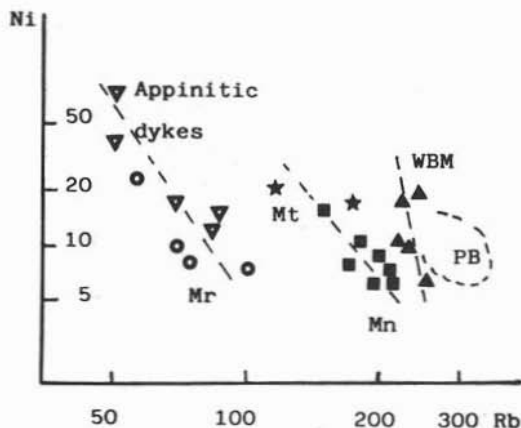


Fig. 2

HYGE distribution demonstrated that a simple petrogenetic model cannot account for the different intrusions. Diagrams based on incompatible and incompatible-compatible elements indicate that the

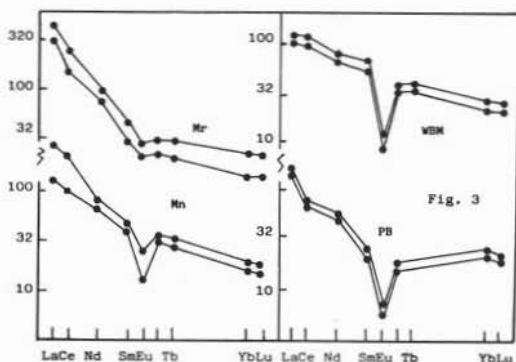


Fig. 3

different rock types cannot be related by fractional crystallization, nor indeed can all be related by different degrees of partial melting of a single source.

REE patterns for the different plutonic bodies are reported in Fig. 3:

- Mr is highly LREE enriched (La-Sm $400-35 \times ch$) compared to HREE (Tb-Yb $26-30 \times ch$) and displays high overall REE fractionation ($La/Yb > 30$) and no Eu negative anomalies;
- Mn is characterized by LREE enriched patterns (La-Sm $195-40 \times ch$; Tb-Yb $28-18 \times ch$); the La/Yb ratios range from 12 to 31 and the HREE patterns are significantly fractionated ($Tb_N/Yb_N = 1.4-2.1$); significant Eu negative anomalies appear ($Eu/Eu^* = 3-.7$);
- WBM shows moderate LREE enrichment (La-Sm $128-40 \times ch$) and slight HREE fractionation ($Tb_N/Yb_N \cong 1.2$), very low La/Yb ratios (6-8) and large Eu negative anomalies ($Eu/Eu^* = 2-.4$);
- PB is characterized by large Ce and Eu negative anomalies and Tb_N/Yb_N ratios < 1 .

It is suggested that the distinct magma types underwent a complex history involving partial melting of different sources and crystal-fractionation (\pm assimilation) processes. The Mergozzo granite is tentatively related to the appinitic dyke intrusions during the pre-uplift period.

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BORIANI A.**, DEL MORO A.*, GIOBBI ORIGONI E.**, PINARELLI L.* - *Rb/Sr systematics of the Hercynian plutonites of Massiccio dei Laghi*

The Late-Hercynian calcalkaline plutonites of Massiccio dei Laghi consist of conspicuous granite bodies and of row of dykes and stocks of basic-to-intermediate rocks, closely connected to the «CMB» (Cossato - Mergozzo - Brissago Line = tectonic contact between Serie dei Laghi and Ivrea-Verbano Zone). The latter are kindred of the Irish and Scottish «Appinites».

Four whole rocks sample of the Montorfano granite yield an isochron of $283 \cong 14$ Ma with a Sr I.R. = $.7098 \cong 5$; this age is conformable, within the analytical error, to that measured on a biotite of the same granite. The age of the biotite from a granite porphyry dyke, cutting across the N contact of this pluton, is significantly younger ($274 \cong 8$ Ma).

The muscovite of a pegmatite from Monte Zuccaro («CBM») yields an age of $259 \cong 8$ Ma, which is significantly lower (from the radiometrical point of view) than the ca. 279 Ma obtained on the same mineral phase in the high-grade country rock (kinzigite). The age of the biotite from the same kinzigite is ca. 213 Ma, whilst those from two Appinitic samples of the same exposure are $196 \cong 7$ Ma.

The biotites from three Appinitic samples of Valsesia (SW along the «CMB») give ages ranging between 214 and 240 Ma.

In the Alzo-Roccapietra granite, the biotite from Pella (W shore of Lake Orta) gives a Middle-Permian age of ca. 267 Ma, whilst those from a granite and a microgranite at Roccapietra (near the «CMB») give significantly lower ages of 216 and 233 Ma resp.

Ages older than 275 Ma, measured on whole rocks and on biotites, probably approach the intrusion age of the individual plutonic bodies. Instead, the mineral ages of the metamorphites and those of the plutonites near the «CMB» lower than 270 Ma, are clearly influenced by the post-Permian rejuvenescence of the «CMB».

Assuming a generalized intrusion age of 290 Ma and behaviour as a closed system for the Appinites of Monte Zuccaro and Valsesia, the calculated Sr I.R. ranges between $.705$ and $.7105$; the lowest values are those of the Monte Zuccaro samples.

The inverse relationship between the Sr I.R. and $1/Sr$ for both groups of samples, is in agreement with a model of magma genesis requiring interaction between a mafic