

differential uplift of different blocks of the axial zone of the Hercynian chain of Sardinia.

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DOBLAS M.*, UBANELL A.G.*, VILLASECA G.** - *Deformed porphyry dikes in the Spanish Central System*

We study here different types of deformational fabrics displayed by some porphyry dikes and associated varieties, which are found forming E.W.-trending swarms in the Spanish Central System (S.C.S.).

Most of these dikes outcrop in the Gredos and Guadarrama Sierras, essentially constituted by Hercynian granitoids, which have been later affected by erosion and vertical motions, contributing to denudate deep levels of these rocks.

The timing of the dikes' deformations and emplacement are nearly coeval, and these structures might be ascribed to two different stress schemes, one intrusion-related, and the other tectonic-related.

In our study the structures appear to be mainly influenced by intrusion-related stresses. The different structures range from fluidal microbandings and folds (ductile), to SC composite planar fabrics (ductile-brittle), and they are found on the dikes' borders. From these structures we might deduce the flow directions of the dikes.

Finally we propose a regional interpretative scheme for the area, in order to explain the different deformational fabrics found in these dikes.

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DUTHOU J.L.*, PIN C.* - *Sr, Nd isotope geochemistry of granitoids from Western Massif Central (France)*

Sr, Nd isotope analyses have been performed on the two main granitoid types occurring in this area: leucogranites and granodiorites - monzogranites, both of Hercynian age (355-290 M.y., Rb/Sr W.R. isochrons.).

Initial Σ Nd and Σ Sr vary from +0.5 to -8.5 and from +30 to +200 respectively. The scatter of Nd is roughly similar for the both groups. However

leucogranites display significantly lower values (-6 to -8.5) than monzogranites and granodiorites (-4 to -7). The range of Sr for leucogranites (+30 to +200) is twice that of the other rocks (+30 to +100).

In an Σ Nd vs age plot, the two suites exhibit contrasting trends; whereas Σ Nd of leucogranites decrease with time, granodiorites and monzogranites follow a reverse tendency of increasing Σ Nd with younger age.

Isotopically the leucogranites may be derived from a metasedimentary source similar to the widespread migmatitic gneisses, which have similar Σ Nd (-7 to -10).

A different origin is required for the monzogranites and granodiorites; These might originate from mixing processes between crustal remelts and mantle-derived magmas. Alternatively, a crustal reservoir with a higher time-integrated Sm/Nd ratio (e.g. intermediate metaigneous rocks, greywackes...) could fit the isotope data also.

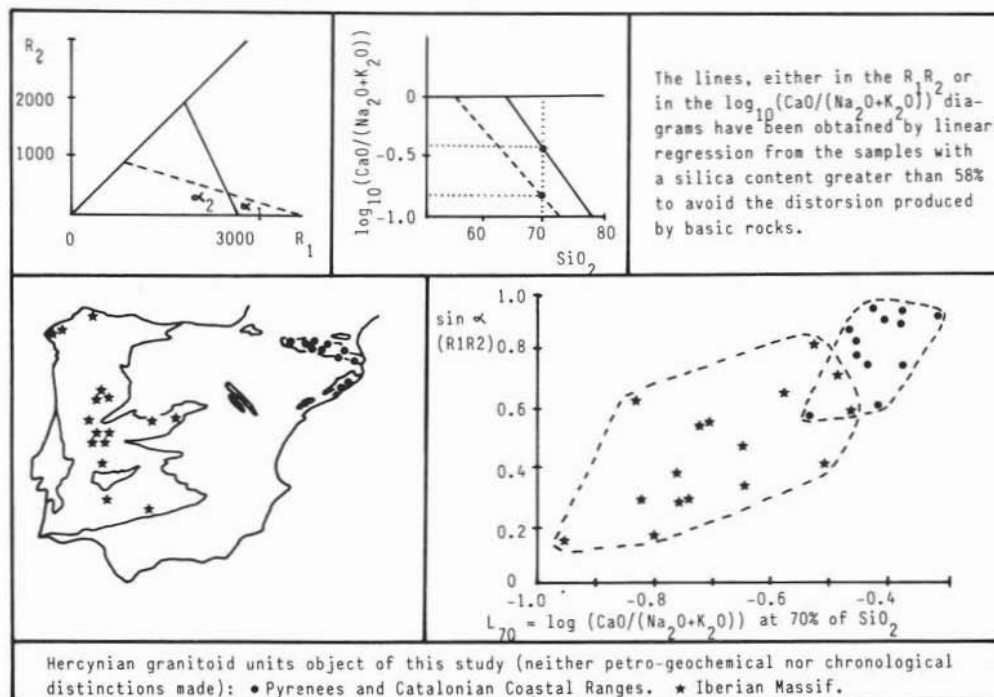
This duality is substantiated by the contrasting isotope vs time trends which point to an increasing role of a high Nd component, in the genesis of granodiorites - monzogranites, and the inverse trend for the leucogranites.

The evolution of granodiorites - monzogranites could be explained either by an increasing amount of mantle derived melts or by the progressive melting of more and more mafic, refractory crustal sources, or both. The leucogranite trend could result from the migration of the melting zone towards a region of more and more evolved meta-sediments.

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ENRIQUE P.*, SERRA P.R.*, CASANOVA I.* - *A new approach to discrimination of Hercynian granitic associations using major-element geochemistry. Application of granitoids of the Iberian Peninsula and Pyrenees*

The R1-R2 (DE LA ROCHE et al., 1980; BATCHELOR & BOWDEN, 1985) and BROWN (1982) diagrams provide independently used, a good discrimination amongst granitoids series. Linear distributions displayed by each representation can be simplified onto a representative parameter for each series and, therefore, they can be used combinedly in an XY plot in which each series is represented by a single point. Regression lines obtained for intermediate and acid rock members in the R1-R2 diagram shows distinctive slopes as different series are considered. Consequently, the value of α (R1R2) (or $\sin \alpha$ (R1R2)) corresponding to the angle formed by each series with the X axis, has been taken as the characteristic parameter that defines an individual series. In the $\log (CaO/(Na_2O + K_2O))$ vs. SiO_2 plot,



representative straight lines for different series display similar slopes (though not identical) which indicate the alkali-lime relationships for each SiO_2 content.

In order to avoid, as far as possible, extrapolation of regression-line values, the logarithm corresponding to a SiO_2 content of 70% has been chosen. Application of the proposed representation system to several Iberian and Pyrenean granitoid associations has revealed: a) a marked geographic affinity of the series, showing a preferential cluster of the Pyrenees and Catalanian Coastal Ranges units and, b) a similarity of the geochemical features of numerous units of the Iberian Massif, independently of their intrusion chronologies with respect to the Hercynian deformation phases.

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FERRARA G.*, PETRINI R.*, SERRI G.**,
TONARINI S.* - *Sr and Nd systematics in the S. Vincenzo rhyolites and their magmatic inclusions bearing on the genesis of peraluminous granitic magmas*

The petrogenesis of peraluminous granitic magmas can be better investigated by studying very young acid glassy rocks in which primary isotopic, chemical and textural evidences are frozen in and not masked by ageing effects

and by re-equilibration during slow cooling. The S. Vincenzo cordierite low-silica rhyolites (4.7 Ma) and their mafic magmatic inclusions of latitic composition, which satisfy these requirements, have thoroughly investigated in terms of petrography, major element chemistry and Sr-Nd isotopes.

Two important processes have been recognized: 1) non-equilibrium anatexis of a pelitic source characterized by $^{87}\text{Sr}/^{86}\text{Sr}$ and $^{143}\text{Nd}/^{144}\text{Nd}$ ratios of about 0.719 and 0.51217 respectively producing peraluminous rhyolitic melts with initial Sr isotopic ratio as high as 0.725 and leaving restitic cordierite, plagioclase, sillimanite, biotite, and perhaps garnet; 2) complex interactions between anatectic and K-rich mantle-derived magmas which can be modelled firstly as simple binary mixing. It is suggested that these two processes are common in the petrogenesis of granitic magmas.

The latitic inclusions have a minette-like texture and represent blobs of hybrid magmas formed in the mixing processes. Mixing calculation and isotopic composition of diopsidic clinopyroxene xenocrysts of the hybrid inclusions indicate Sr contents greater than 1550 ppm and $^{87}\text{Sr}/^{86}\text{Sr}$ close to 0.7077 for the mantle-derived magma, which is in terms of isotopic and mineralogical feature interpreted as related to the Roman Province volcanism.

Whole rock isochron age of S. Vincenzo rhyolites (120 Ma) shows that Rb/Sr dating applied to old plutons can have residual bias even greater than 115 Ma. Non-equilibrium anatexis and mixing with non-cogenetic magmas as well as other processes producing significant heterogeneities at the time of emplacement must be