trusion marks a relative short-lived magmatic pulse within two main magmatic events. At 331–323 Ma about 80 % of the batholith were formed. Various fine-grained granites associated with some diorites represent the second less important episode at 319–315 Ma. The Freistadt granodiorite probably correspond to an independent, younger magmatic activity.

References

Finger, F. – von Quadt, A. (1992): Mitt. Österr. Miner. Gesell., 137, 83–86
Friedl, G. – von Quadt, A. – Finger, F. (1996): TSK 6, 127
Fuchs – Thiele (1968): Verh. Geol. BA, 49
Büttner, S. – Kruhl, J. (1997): Geol. Rund., 86, 21–38
Gerdes, A. (2001): Terra Nova, 13, 305–312
Klötzli, U. S. – Koller, F. – Scharbert, S. – Höck, V. (2001): J. Petrol. 42/9, 1621–1642.

The Golfo Aranci (Sardinia, Italy) metamorphic basement: from the Southern Variscan realm a look towards the North

C. GHEZZO – F. GIACOMINI – R. M. BOMPAROLA

University of Siena, Italy, giacomini@unisi.it

The Golfo Aranci metamorphic basement (NE Sardinia, Italy) is considered a fragment of the southern European Variscan belt. It is made up essentially by migmatitic paragneisses and slightly deformed orthogneisses, the latter of Ordovician age (P. India, Mt Alvu orthogneiss). Scattered lenses of mafic rocks (amphibolites s.s., garnet amphibolites and eclogites) crop out within the migmatitic gneisses and are concordant with the main regional foliation of the migmatites. The metamorphic basement is intruded by several late- to post tectonic Variscan shallow-level plutons: high-K calc-alkaline tonalitic to granitic intrusions (P. to Rotondo tonalite, Mt. Cannareddu granodiorite, Sa Curi granite) and peraluminous leucogranites (Rio Maronzu two-mica leucogranite).

The migmatitic gneisses are monotonous qtz, kfs, pl, bt, ± ms ± grt ± sil stromatic migmatites. Kyanite is commonly found as small relict inclusions within plagioclase or muscovite grains. The amphibolites s.s. are pl-hbl–qtz ± cpx banded amphibolites with granoblastic texture and in one case (Morongiu Nieddu outcrop) are closely associated with mafic and ultramafic cumulates with relic magmatic textures (Franceschelli et al., 2002). Eclogites and garnet amphibolites are generally associated and are easily distinguishable from the amphibolite s.s. by the occurrence of garnet porphyroblasts. Eclogites are commonly banded rocks, displaying grt rich and grt poor domains and are commonly strongly recrystallised. In a few samples they still display relics of a typical high-pressure paragenesis with low jadeite omphacite ($Jd_{31–36}$), grt, rt, qtz, ky, zo. Plagioclase–diopside symplectites on former omphacite, plagioclase–hornblende coronitic symplectites around garnet are the most common features of the retrogressed eclogites. Two eclogite samples display sapphirine – corundum – spinel – anorthite coronitic symplectites around kyanite and scarce opx occurrences within the di–pl symplectites on former omphacite. Garnet amphibolites are mainly constituted by plagioclase, brown amphibole, garnet and quartz. Relics of plagioclase–diopside symplectites are present and, together with the corroded garnet porphyroblasts, are rimmed by brown amphibole-plagioclase symplectites.

The textures and mineral parageneses in the migmatitic gneisses and in the mafic rocks point to a complex metamorphic history, which started with a high-pressure (up to 14–16 kbar) and medium temperature (600–650 °C) metamorphism related to the Variscan collisional event and recorded by the mafic eclogites. This event was then followed by an early decompression (8–10 kbar) accompanied by a possible increase of temperature (700–750 °C) up to the granulite facies (pl–di over omp and spr–crn–spl–pl over ky). The final step is recorded by the pervasive re-equilibration at lower pressure and temperature (P <8 kbar, T = 550–600 °C) within the amphibolite facies (amp–pl symplectites, banded amphibolites, migmatitic gneisses): this was probably related to the late Variscan transpressive- to extensional stage (Carosi – Palmeri 2002), which triggered the emplacement of large granitic masses within the crust.

Sapphirine-bearing rims around ky were never found till now in the Sardinian eclogites, whereas several occurrences are reported from the Central European Variscides from the Bohemian to the Armorican Massifs (O'Brien, 1997; Godard – Mabit, 1998). The proposed metamorphic history for the NE Sardinian basement is generally similar to those proposed for Central European Variscides, so adding new important data for the deciphering of the Variscan orogenic belt.

References

Carosi – Palmeri (2002): Geol. Mag. 139, 497–511.
Franceschelli et al. (2002): Lithos 63, 1–18.
Godard – Mabit (1998): Lithos 43, 15–29.
O'Brien (1997): Lithos 41, 119–133.