**Appendix: Analytical methods and protocols**

**Mineral chemistry**

Mineral compositional data were obtained using a Camebax SX100 electron microprobe at the Institut für Mineralogie, Universität Stuttgart. Operating conditions were 15 kV and a 15 nA beam current (WDS mode). Mineral compositions were determined relative to natural and synthetic standards. Spot sizes were 1-10 m depending on the phases analysed. Concentration maps for major elements (Ca, Fe, Mn, Mg and Al or Na) were also produced by stepwise movements of the thin sections under the electron beam; counting times per step were 100 ms. BSE imaging was obtained by using the same electron microprobe. Operating conditions were: 15 kV and 20 nA. Classification of amphibole with the general formula AB2C5T8O22(OH)2 has been made according to the IMA recommendations (Leake *et al*. 2004), by means of the WINAMPH software of Yavuz (2007). Other mineral structural formulae were calculated through the software CalcMin\_32 (Brandelik 2009).

**Whole rock geochemistry**

Samples selected for geochemistry were grounded in a pre-contaminated agathe mill after careful washing in distilled water. The chemical analyses were performed at the Activation Laboratory (Ontario, Canada), through ICP emission (major and some trace elements) and ICP-MS for trace elements (Code of analyses WRA+TRACE 4 Lithoresearch). For major elements the precision is estimated better than 2% for values higher than 5 wt% and better than 5% in the range 0.1 – 5 wt%. For trace elements and REE the precision is 5 % in the range 1 - > 100ppm and 10% in the range 0.1 – 1 ppm.

**40Ar/39Ar geochronology**

Samples selected for the 40Ar/39Ar dating were crushed, sieved and single grains of white mica of about 0.5 mm in diameter were handpicked under binocular microscope and cleaned in ultrasonic bath using acetone and distilled water. Pure paragonite has been eliminated under the microscope since it is more opalescent than phengite. However, according to the mineral description given in the petrography section, it is likely that most of the selected grains are partially zoned, consisting of a mixture of phengite with high and low Si contents and some interlayered paragonite. Paragonite is more abundant in the metapelites (sample MS39) as confirmed by the relatively low K-derived 39Ar content of this sample compared to the other micas derived from the blueschists. The minerals were packaged in aluminium foils and irradiated for 40 hours in the core of the Triga Mark II nuclear reactor of Pavia (Italia) with several aliquots of the Taylor Creek sanidine standard (28.34 ± 0.10 Ma) as flux monitor. Argon isotopic interferences on K and Ca were determined by irradiation of KF and CaF2 pure salts from which the following correction factors were obtained: (40Ar/39Ar)K = 0.00969 ± 0.00038, (38Ar/39Ar)K = 0.01297 ± 0.00045, (39Ar/37Ar)Ca = 0.0007474 ± 0.000021 and (36Ar/37Ar)Ca = 0.000288 ± 0.000016. Argon analyses were performed at Géosciences Montpellier (France) with an analytical system that consists of: (a) an IR-CO2 laser of 100 kHz used at 5-15% during 30 sec for step-heating experiments, (b) a lenses system for beam focusing, (c) a steel sample chamber, maintained at 10-8 - 10-9 bar, with a drilled copper plate and samples on, (d) an inlet line for purification of gases including two Zr-Al getters, (e) a multi-collector mass spectrometer (Argus VI from Thermo-Fisher). A custom-made software controls the laser intensity, the timing of extraction/purification and the data acquisition. The argon background within the system was evaluated every three sample analyses. The ArArCalc software© v2.5.2 was used for data reduction and plotting. The one-sigma errors reported on plateau, isochron and total gas ages include the error on the irradiation factor J. Atmospheric 40Ar was estimated using a value of the initial 40Ar/36Ar of 295.5. Due to the high radiogenic content of the dated micas, the data reported in the 36Ar/40Ar *vs* 39Ar/40Ar correlation plot do not provide meaningful information on the composition of the initially trapped argon. This is a common characteristic for old and K-rich samples analysed with this method since the 40Ar is the reference isotope. A complete set of isotopic results is available in Table 4.