

**NEW PETROLOGICAL CONSTRAINTS ON THE P-T DECOMPRESSION PATH  
OF THE UHP BROSSASCO-ISASCA UNIT (DORA-MAIRA MASSIF,  
WESTERN ALPS) FROM THE P-T PSEUDOSECTION STUDY  
OF A GARNET-KYANITE METAPELITE**

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A Grt-Ky-bearing metapelite from the UHP Brossasco-Isasca Unit (BIU), Dora-Maira Massif, Western Alps, has been analysed in order to better define the decompression path. The meta-pelite consists of pre-Alpine porphyroblastic garnet (Grt1) up to 2 cm in diameter, idioblastic Alpine garnet (Grt2), phengite, kyanite, quartz pseudomorphous after coesite and small-grained paragonite aggregates after former jadeite. Late chloritoid and staurolite idioblasts, first reported from a BIU metapelite, are randomly oriented across the main UHP foliation defined by phengite.

Grt2 is characterized by high almandine (Alm<sub>72-77</sub>) and very low grossular (Grs<sub>1-9</sub>) contents, suggesting a growth from a Ca-poor pelitic composition. Large, high-Si phengites (Si up to 3.55 a.p.f.u.) are partially replaced by low-Si phengites (Si = 3.15 - 3.05 a.p.f.u.). Staurolite is strongly zoned, with Mg-richer cores ( $X_{Mg} = 0.20$ ) and Fe-richer rims ( $X_{Mg} = 0.12$ ). Chloritoid is homogeneous and relatively Fe-rich ( $X_{Mg} = 0.20 - 0.22$ ).

A P-T pseudosection in the MnNKFMAH model system was calculated in the range T = 500 - 700 °C and P = 6 - 18 kbar, using the “effective bulk rock composition” obtained by SEM-EDS analyses of a representative number of metamorphic domains with only Alpine mineral assemblages. The P-T pseudosection was calculated following the approach of CONNOLLY (1990), and using the internally consistent thermodynamic data set and H<sub>2</sub>O equation of state of HOLLAND & POWELL (1998, upgrade 2002).

Microstructural and mineral chemistry data, together with the calculated P-T pseudosection, strongly constrain a portion of the BIU decompression P-T path from T = 550 °C, P = 9 kbar to T = 650 °C and P = 15 kbar. This trajectory is in good agreement with the P-T paths previously estimated by COMPAGNONI et al. (1995), NOWLAN et al. (2000), CHOPIN & SCHERTL (2000), RUBATTO & HERMANN (2001) and HERMANN (2003).

**References**

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