# Evidence for paleoseismic event under eclogite conditions in the subducted rocks of Sesia Lanzo unit, Western Alps

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Eclogite micaschists of the Sesia Lanzo unit (Western Alps, Italy) present thin and discontinuous dark veins with variable orientation. In this preliminary study we combined optical microscopy and micro-Raman spectroscopy to investigate a 1-2 cm thick vein identified in a large boulder collected near the Lys River near Lillianes (Italy). Thin sections of the boulder rock and the major vein confirms a) the eclogite facies of the boulder rock, composed of clinopyroxene, garnet, quartz and rutile, b) the cataclastic deformation of the surrounding minerals (i.e., clinopyroxene and garnet) cut across by dark veins. Interestingly, intergrown very-fine and blue-violet minerals are observed in the inner portion (1- 2 cm) of the vein, while white mica (paragonite) and titanite blasts are observed in its outer portion (1mm). The inner portion also show fluidal microstructures recording that of pseudotachylytes (Fig. 1), in addition to dark relict of microclasts and small paragonite crystals with corroded borders surrounded by microzircons. The micro-Raman analyses identified glaucophane and talc in the inner portion of the vein, within a well-preserved eclogite rock.

The macro/microstructural and mineralogical observations possibly suggest that the eclogite underwent a crushing event that led to the formation of cataclasite and pseudotachylite veins. Hydrated minerals, i.e., talc and glaucophane, successively crystallized over the inner glassy vein matrix preserving the fluidal microstructure of the pseudotachylite. In the outer part of the vein, paragonite crystallized at the same time as glaucophane and talc. Finally, the glaucophane-talc vein was cut across by late calcite veins. The microstructural and mineralogical observations provide crucial insights into the geodynamic setting of the Alpine wedge during subduction.

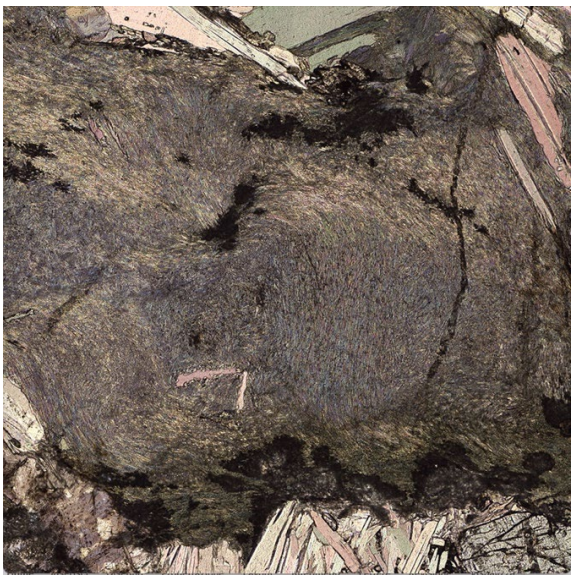

*Figure 1- Glaucophane and talc over a pseudotachylite vein*