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Exploring new frontiers in fluids processes in subduction zones

Fluid-rock interaction in the ultramafic-mafic association of Cabo Ortegal Complex (NW-Spain)

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During subduction of oceanic lithosphere dehydration of the slab induce generation of fluids which cause significant geochemical changes on the overlying subcontinental lithospheric mantle. Characterizing fluids, occurring in volatile-bearing minerals and as fluid inclusions, provides a key to understand fluid-rock interactions in subduction zones.
Fluid inclusions, which can be preserved in high-pressure mafic and ultramafic rocks give direct evidence on the composition and behaviors of fluid phases occurring in such geodynamic environment. Mafic-ultramafic assemblages exposed at surface provide an excellent opportunity to study in situ physical and chemical features of the lithospheric mantle. Orogenic peridotites, including HP and UHP ultramafic bodies, serve as a potential source of information on the origin, migration, transportation and reactions of fluids/melts in suprasubduction mantle wedges [1]. Major examples for such regions in Europe are the Central and Western Alps (Alpe Arami, Cima di Gagnone, Ulten, Dora Maira, Monviso), the WGR in the Scandinavian Caledonides and the European Variscan belt [2] [3]. The Cabo Ortegal Complex is part of the Variscan belt of Europe, which represents fragments of variably subducted continental and oceanic lithosphere that were obducted onto the Gondwana edge during Variscan orogeny [4]. In the Cabo Ortegal Complex of NW Spain besides high-pressure granulites, eclogites and gneisses, ultramafic mantle rocks are also outcropped and and cover an area of tens of km2 [5]. The ultrabasic domains with an arc-root lithospheric mantle origin consist of abundant pyroxenites associated with harzburgites, dunites and chromitites [6].
Our study summarizes features of the secondary fluid inclusions in pyroxenites bodies hosted in ultramafic massifs of Cabo Ortegal Complex.

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